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FRACTURE OF THE OLECRANON PROCESS OF THE ULNA

Treatment by Excision of Fragment and Repair of Triceps Tendon

Chairman's Address

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Fracture of the olecranon process of the ulna not infrequently results in some degree of loss of flexion and extension of the elbow joint. Particularly is this so in elderly persons and in patients subjected to long immobilization with the elbow in extension. So prolonged is the recovery from treatment by immobilization in extension that this treatment has been almost abandoned. Open reduction and fixation of the fractured fragment to the shaft of the ulna in order to permit early mobilization of the elbow has superseded the closed method of treatment. Many different types of suture, including catgut, wire and fascia, have been advised and many ingenious screws for fixation of the olecranon fragment have been devised.

Even with these types of treatment, which permit relatively early mobilization of the joint, some loss of motion is the rule in the older patient, and is not infrequent in younger patients. After suture, with whatever material it is accomplished, the complication of separation of the fragments due to rupture of the retention suture is not uncommon. Even though the suture remains intact, the olecranon fragment too often tilts a little, resulting in an incongruous articular surface which eventually causes a traumatic arthritis of the elbow joint. Extensively comminuted fractures of the olecranon do not lend themselves well to any type of internal fixation, and a congruous joint surface cannot be restored.

Removal of the fractured fragment of the olecranon does away with the necessity for the healing of a fracture, which is time consuming and necessitates long immobilization in a joint which does not tolerate fixation well. It obviates the necessity to heal a bone and substitutes only the necessity to heal fascia, thus shortening the time of fixation of the joint. It also obviates the chance for an incongruous articular surface.

Excision of the fractured fragment is not applicable before the completion of bone growth. It should not be done in those rare instances in childhood and adolescence in which the upper epiphysis of the ulna is separated from the shaft, as a growth disturbance is certain to result. Any fragment with an epiphysis attached should be replaced.

Excision of the fractured fragment in treatment of fractures of the olecranon has not received prominence in the literature. In 1918 Foille [1] reported the treatment of 1 patient by this method. Although we are certain that this type of treatment has been employed by many surgeons in the United States, there are no reported series in the literature from this country. Dunn [2] in England in 1937 reported 2 cases in which he employed this type of treatment and stated that the early return of good function was so striking that he had performed his last suture of the fragments. Wainwright [3] in 1942 reported the end results of 20 fractures of the olecranon treated by this method and felt it superior to attempts to effect union in older persons and in comminuted fractures. He also felt it acceptable in young persons when hasty return to work was necessary.

Our purpose in this paper is (1) to present the end results of treatment of fractures of the olecranon process of the ulna by total excision of the fractured fragment in 10 patients, (2) to enumerate the indications for this type of treatment and (3) to present a technic for excision of the olecranon process and repair of the triceps tendon.

Excision of the olecranon process was performed on 7 patients with old ununited fractures of the olecranon. Five of these patients had previously had an open reduction and fixation of the fragments with a wire loop. In 2 of these patients the wire loop had ruptured with separation of the fragments and in 3 the wire loop had stretched enough to permit a hiatus between the fragments with a nonunion. Two patients who had suffered compound fractures had been debrided and immobilized without any internal fixation. All had a complete nonunion and an incongruous articular surface. The excision of the fragment was carried out on an average of seven and one-half months after the original injury in these patients. The shortest interval between the injury and excision of the fragment was five months, and the longest interval was thirteen months. All patients prior to excision of the fragment complained of pain and all presented restriction of

Read before the Section on Orthopedic Surgery at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1947.

1. Foille: Gunshot Fracture of Olecranon Treated by Removal, Marseille méd., 1918.
2. Dunn, N.: Operation for Fracture of Olecranon, Brit. M. J. **1**: 214 (Feb. 4) 1939.
3. Wainwright, D.: Fracture of Olecranon Process, Brit. J. Surg. **29**: 403-406 (April) 1942.

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motion in the elbow joint. The average restriction of flexion of the elbow in these 7 patients was 38 degrees. One patient had a restriction of flexion of 55 degrees, and 1 had lost only 10 degrees of flexion. The average loss of extension in these 7 elbows was 28 degrees. One patient had lost no extension, and the greatest loss of extension was 60 degrees.

In all patients subjected to this procedure there was a decrease in the subjective complaint of pain after the operation. All patients had an increase in the range of motion of the elbow joint as a result of the operation. The average improvement in motion in these 7 patients was 57 degrees. The greatest improvement in motion was in a patient who obtained an increase of 90 degrees, gaining 50 degrees in flexion and 40 degrees in extension. The least improved patient was a person who gained only 10 degrees of motion. This patient had, however, only a 10 degree restriction of flexion to start with and regained normal flexion with a relief of pain and improvement in strength.

Fig. 1 (W.G.).—Postoperative appearance after removal of fragments and tricepsplasty.

The gain in motion after operation, moreover, was rapid. In all instances 60 to 70 per cent of the restored motion resulted in the first sixty days after operation.

Three of these patients had normal strength in the triceps muscle and were able to do push-ups from the floor. Four patients lost some strength in the ability to extend the elbow against resistance. The greatest loss of triceps power amounted to 25 per cent, which would be disabling only for prolonged, repeated overhead lifting.

Three patients felt that they traumatized their ulnar nerve, or "bumped their crazy bone," easier than before the excision of the olecranon. The other four noticed no tendency to strike the "crazy bone." None had any subjective or objective neurologic complaints referable to the ulnar nerve distribution in the hand. It is probable that the anterior transposition of the ulnar nerve should be done at the time of excision of the olecranon. This can be easily carried out, as the nerve should be isolated at the time of the excision and tricepsplasty.

One patient with a large fragment broken out of the olecranon process, which did not enter the trochlear (semilunar) notch, was treated by excision of the fragment and repair of the rent in the triceps tendon. This patient promptly, within four weeks, regained a normal range of motion in the elbow joint. This type of fracture should always be treated by excision of the fragment. Such fragments are prone to nonunion and remain loose and painful.

One patient, who suffered a severely comminuted fracture of the olecranon process, caused by severe direct trauma to the joint, was treated by excision of the comminuted fragments and repair of the tendon. The fragments which were removed comprised 70 per cent of the trochlear (semilunar) notch. Because of infected lacerations on the skin, resulting at the time of injury, excision of the fragments had to be delayed for seven weeks, until the skin healed and no longer carried the danger of infecting the elbow joint. During these seven weeks the elbow was immobilized except for dressings. At operation there was advanced organization of the comminuted fragments, and any attempt at suture was impossible. Six months after excision of the fragments and repair of the triceps tendon the patient had 110 degrees of motion in the elbow joint. He was restricted only 5 degrees in flexion and 25 degrees in extension. There was no weakness in the triceps muscle, the patient being able to do push-ups from the floor. He had no complaints referable to the ulnar nerve (figs. 1, 2, 3 and 4).

In 1 patient, a housemaid aged 60, an acute fracture of the olecranon process was treated by excision of the fragment and repair of the tendon. In this patient the fragment comprised one half of the trochlear (semilunar) notch of the ulna. Sixty days after the operation the patient returned to her duties as a maid and had 110 degrees of motion in the elbow. Six months after the excision of the fragment, she had a normal range of flexion and extension in the elbow joint, normal strength in the triceps muscle and no complaints.

Instability of the elbow joint does not result from this procedure as long as the coronoid process and the vertical distal face of the trochlear (semilunar) notch of the ulna remain. Stability of the elbow joint is dependent on the coronoid process and the distal vertical face of the ulna, the lateral ligaments of the joint and the function of the biceps, brachialis and triceps muscles. If the fracture of the ulna is distal to the coronoid process the fragment should not be excised. Removal of a fragment of this size amounts to a partial resection of the elbow joint. When the fracture is proximal to the coronoid process, a fragment which constitutes 80 per cent of the trochlear (semilunar) notch of the ulna may be excised and result in absolutely no loss in the stability of the elbow joint.

TECHNIC OF OPERATION

A curved skin incision, starting on the forearm 10 cm. below the tip of the olecranon and extending 10 cm. up the arm from the tip of the olecranon, is made through the skin and fascia. The incision is made to deviate to the medial side of the olecranon process. The skin and subcutaneous tissue on the posterior aspect of the elbow are reflected widely to the medial and lateral

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sides to give good exposure of the condyles of the humerus. The ulnar nerve is isolated and freed adequately to permit of its transposition to the front of the medial epicondyle of the humerus. The nerve is protected throughout the operation.

This exposes, in the arm portion of the incision, the lower tendinous portion of the triceps and medially some of its muscle fibers. On the lateral side the border of the triceps and the fibers of the extensor carpi radialis muscle are in view. In the lower or forearm portion of the incision the tricipital aponeurosis and the fibers of the origin of the flexor carpi ulnaris are exposed. On the lateral side the tricipital aponeurosis blends with the dense fascia covering the anconeus.

Starting over the ulna, 2 to 3 cm. distal to the fracture line through the olecranon process, a tongue of fascia, aponeurosis and periosteum of the ulna is cut with a sharp knife. The end of this tongue should be 3 to 3.5 cm. wide. The lateral margin of this tongue is

Fig. 2.—Preoperative appearance of extensively comminuted fracture of olecranon in patient W. G.

cut through the fascia covering the anconeus and as far proximally as the fibers of the extensor carpi radialis. The medial side of the tongue is cut through the tendinous portion of the triceps to the point where it deviates laterally and then extends 2 cm. into the muscle fibers. The tongue is freed by pushing the periosteum off the ulna with a sharp elevator up to the point of fracture. Any remaining attachments of the sides of the tongue are then freed by sharp dissection. This permits the tongue to be turned over on itself with the fractured fragment, or fragments, attached to it and completely exposed. The humeral surface of the elbow joint is also widely exposed so that any fragments of abraded articular cartilage on the trochlear and capitellum may be removed.

The fractured fragment is then removed from the tongue of aponeurosis by sharp dissection with a knife, cutting close to bone. If this is done carefully, the aponeurosis will not be buttonholed. In fresh fractures there may already be a large rent in the aponeurosis. In old ununited fractures there is a thick, dense band of scar completely covering the fragment, and the fractured piece of bone can be easily removed without perforating the tongue. This leaves a dense fibrous tongue of aponeurosis which can, by gentle traction,

Fig. 3 (W. G.).—Range of motion in flexion and extension of elbow six months after excision of fragments and tricepsplasty.

be stretched as much as 1.5 cm., owing to the fact that its sides extend into muscle fibers and the free lateral border of the triceps. The proximal end of the ulna is then smoothed by removing any sharp spicules which may project from its cortex.

The edge of the periosteum of the ulna from which the tongue has been released is then elevated enough to create an edge to which the aponeurotic tongue may be sutured. If desired, the periosteum of the ulna may be incised 1 or 2 cm. distal to its proximal edge, thus creating a tunnel to pass the end of the tongue beneath.

With the elbow extended, gentle traction is made on the tongue, which causes it to slide in relation to the

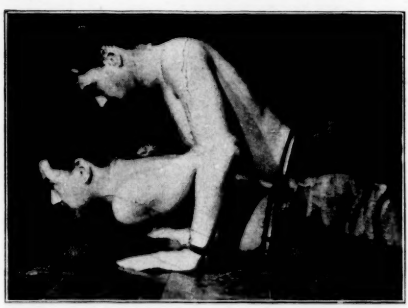

Fig. 4 (W. G.).—Elbow during push-ups, showing preservation of triceps power.

lateral and medial structures from which it has been separated. A few sutures of number 0 chromic catgut passed through the sides of the tongue while it is held under tension, into the lateral and medial fascial structures from which it was freed, tend to hold it stretched and reduce the muscle pull of the triceps.

The distal end of the tongue is then sutured about its periphery to the elevated proximal end of the periosteum and fascia over the ulna, with interrupted sutures of number 0 chromic catgut. It may be overlapped and imbricated. If a tunnel of periosteum has been created it is passed under the tunnel and sutured to the periosteum and fascia distal to the tunnel, and

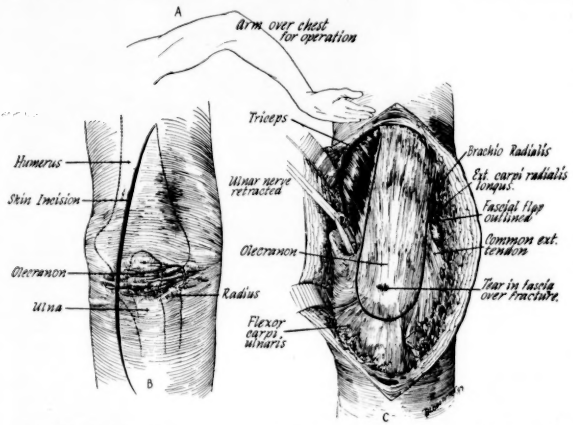

Fig. 5.—Technic of operation: *A*, arm over chest to expose field; *B*, skin incision; *C*, incision of triceps aponeurosis to form tongue shaped flap.

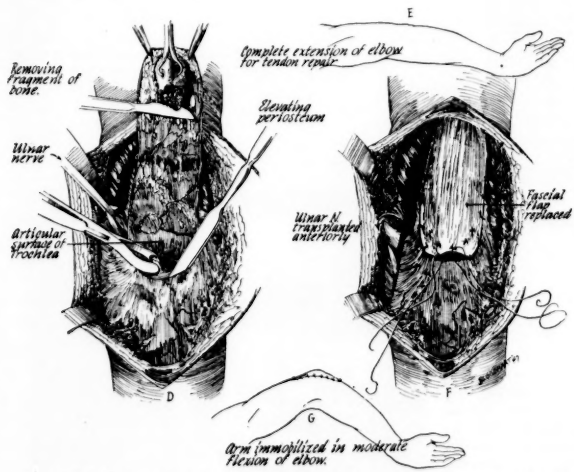

Fig. 6.—Technic of operation: *D*, removal of fragment by sharp dissection; *E*, elbow extended to reattach triceps to ulna; *F*, suture of tongue of triceps aponeurosis to periosteum of ulna; *G*, skin closure and position of immobilization.

mattress sutures are placed through the roof of the tunnel and the tongue.

The ulnar nerve is then transposed to the volar aspect of the medial condyle, if it is desired to transplant it. It is probably wise to do this routinely to prevent the possibility of making the "crazy bone" vulnerable.

Before the skin is closed, the extended elbow is flexed to note the tension on the tongue. It is usually possible to flex the elbow to at least 110 degrees (through 70 degrees) without producing undue tension on the sutures holding the tongue to the periosteum. The skin is then closed by approximating its edges with interrupted sutures of fine silk. The suture line is covered with petrolatum gauze and dressings. The arm is copiously bandaged with sterile sheet wadding. A molded plaster splint is applied along the posterior aspect of the arm and forearm from the axilla to the wrist, with the elbow flexed to an angle which does not put undue tension on the sutures holding the tongue, usually 70 to 90 degrees.

The immobilization is continued for three weeks and then the splint is discarded and motion started. After the splint has been discarded the patient may carry the arm in a sling for a week to ten days.

In fresh fractures there may be, and usually is, a rent of varying size in the aponeurosis. Even though a rent is present, a tongue of triceps aponeurosis can be developed which permits of adequate attachment to the surrounding structures to give good anchorage of the triceps muscle to the ulna. If the suture of the triceps aponeurosis to the periosteum of the ulna is compromised because of the presence of a rent, it may be necessary to immobilize the elbow in a greater degree of extension than if a complete tongue of aponeurosis is available.

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SUMMARY

Ten patients with fractures of the olecranon were treated by excision of the fractured fragment and repair of the triceps tendon. Five of these patients had old ununited fractures of the olecranon in which attempts to obtain union of the fragments by open reduction and suture with wire had failed. Two patients had an ununited fracture, which resulted from the treatment of a compound fracture by simple immobilization following débridement. One patient had an extensively comminuted fracture for which operative intervention had to be delayed two months because of infected skin. One patient had a fresh fracture, and 1 patient had a fracture which did not enter the trochlear (semilunar) notch.

All patients with old ununited fractures of the olecranon gained motion following this procedure. Three patients with old ununited fractures had normal power in the triceps, and 4 patients had 75 per cent of normal power in the triceps. Of these 7 patients with old ununited fractures treated by excision of the fragment, 3 felt that their "crazy bone" was more vulnerable than before the operation. None had any instability of the

elbow. All had returned to various kinds of gainful occupation. The most severe complaint consisted of an ache after prolonged heavy work.

One patient with an extensively comminuted fracture treated in this manner regained 110 degrees of motion in the elbow and normal strength in the triceps and had no complaints. An elderly patient with a fresh fracture treated by excision of the fragment and repair of the triceps tendon regained normal motion and normal triceps power and returned to her work as a maid in sixty days.

Excision of a fragment which did not involve the joint in 1 patient resulted in a normal elbow.

CONCLUSIONS

1. Old ununited fractures of the olecranon process of the ulna should be treated by excision of the fragment and repair of the triceps tendon.

2. Attempts to obtain union of old ununited fractures of the olecranon process by bone grafting requires long immobilization and results in severe loss of motion in the elbow. These fractures should not be treated by bone grafting.

3. Extensively comminuted fractures of the olecranon process of the ulna should be treated by excision of the fragments and repair of the triceps tendon.

4. In elderly people with acute fractures of the olecranon excellent results can be expected from treatment by excision of the fragment and repair of the triceps tendon.

5. Any fragment fractured from the olecranon process which does not involve the trochlear notch should be removed.

6. Instability of the elbow joint will not result as long as the coronoid process and the distal face of the trochlear (semilunar) notch of the ulna remain. As much as 80 per cent of the trochlear (semilunar) notch may be removed without danger of producing instability in the elbow joint.

7. Severe loss of triceps power does not result from excision of large fragments of the olecranon.

Medical Rehabilitation.—Now let's take a look at medical rehabilitation which is made up of five different divisions: physical therapy, occupational therapy, corrective therapy, educational therapy and manual arts therapy. They're all part of the VA program. They help patients to build up within themselves the will and the morale to get out of bed, to learn to stand, to dress, to operate a wheelchair, to walk—to want to get well. They help patients to start thinking about future job possibilities. They help patients to devote serious thought and serious effort to the kind of work they'd like to do later on, the kind of work they may be physically fitted to do. And they start doing this as soon as the patient enters the hospital. Along with this physical therapy, educational therapy goes hand in hand. Sixty-five per cent of our enlisted men in World War II and 13 per cent of our officers never graduated from high school. With the help of educational therapy we have provided the added driving force that made it possible already for 2,000 disabled veterans to win high school diplomas. . . .

I don't want you to get the idea that the purpose of medical rehabilitation is to help get a veteran through high school and send him on to college or to train him for a job. We do that in many cases. But the primary purpose of medical rehabilitation is to help a patient get well faster.—Excerpt from address by Dr. Paul R. Hawley before the twenty-sixth National Convention of Disabled American Veterans, 1947.

DELAY IN THE DIAGNOSIS OF CANCER

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Theoretically, all cancers would be curable if the diagnosis were made quickly enough and the proper treatment were applied immediately. Because in some sites the disease may be insidious in onset and so protean in its early symptomatology, this goal will never be reached until the cause of cancer is determined or until the universal cure for cancer is found. With all the advances made in the diagnosis and treatment of cancer in the last twenty-five years, it is a fact that the reduction of cancer mortality, potentially possible, has hardly begun. The primary reason for this failure is not due to inadequate therapeutic measures. The basic cause for the lack of improvement is the prolonged delay between the time when the patient has first symptoms and the time when definitive treatment begins.

In Dorn's [1] recent survey it has been estimated that there are 300,000 new cases of cancer annually in the United States. Each year about 150,000 persons die of this disease. He has estimated further that 34 per cent of all the patients in whom a diagnosis of cancer is made die within one year. Five year survival rates in unselected cancer patients run considerably lower. On the other hand, five year survival rates in patients treated for early cancer are much higher—approximately 75 per cent in cancer of the breast and exceeding 95 per cent in cancer of the lip. The responsibility for the failure in improvement of cancer mortality rates lies both with patients and physicians. Yet reduction in the delay in diagnosis is the one point in the current offensive against cancer that holds more immediate promise than any other associated clinical or research activity at the present time.

In 1938 Pack and Gallo [2] surveyed 1,000 cases of cancer and determined where the culpability for the delay in the diagnosis of cancer lay—the physician, the patient or both, and to what extent. Since many of their data were drawn from Memorial Hospital files, it seemed a logical step to make a similar survey at the same hospital. This was done in the first three months of 1946.

The objectives of the study were to determine the present status of the delay and culpability and to determine if any progress had been made since the period 1923-1938, the time covered in the previous study.

METHOD OF STUDY

The method of study was relatively simple. All new clinic cancer patients, suspected or proved, were first seen in the examining clinic of the hospital. Here an initial complete history and physical examination were made. The data used in this study were obtained by physicians, and the patients were not aware that a special study was being made. Actually, the questions asked were no different than those asked in any complete history, consisting of: When did you first have symptoms? When did you first consult a physician?

From the Medical Department, Memorial Hospital; Associate Attending Physician (Dr. Leach) and National Cancer Institute Fellow (Dr. Robbins).

1. Dorn, H. F.: Illness from Cancer in the United States, Pub. Health Rep. **59:** 33 (Jan. 14); 65 (Jan. 21); 97 (Jan. 28) 1944.

2. Pack, G. T., and Gallo, J. S.: Culpability for Delay in the Treatment of Cancer, Am. J. Cancer **33:** 443-462 (July) 1938.

How soon after you first consulted a physician was treatment started? Was a piece of tissue removed for examination? Of what did the treatment consist? and the like. Five hundred random case histories were used. The data were abstracted to special forms for recording and analysis.

In order to make the study as similar to the prior survey as possible, the ground rules used for determining delay and culpability were those set up by Pack and Gallo. These are:

1. The patient was considered at fault if: (*a*) he delayed three months or more after first symptoms until he consulted a physician or (*b*) he refused to follow acceptable advice such as a biopsy, roentgen studies or referral to a suitable person, hospital or clinic.

2. The physician was considered culpable if: (*a*) he failed to arrive at a diagnosis in a month or, if unable to do so, did not refer the patient to a suitable person, hospital or clinic; (*b*) he failed to give proper advice or any counsel at all, or if he failed to apply proper therapeutic measures, or (*c*) he failed to refer the patient to a suitable person, hospital or clinic when the patient failed to improve.

3. Naturally, if a combination of the above factors was present, the physician and the patient were considered jointly responsible for the delay.

Delay and Culpability

	Pack & Gallo[2] %	Present Study %
Patient alone	44.3	32.0
Patient and physician	18.0	10.8
Physician alone	17.0	27.8
No delay	20.7	29.4
	100.0	100.0

It is appreciated that data obtained from the patient alone are biased. A patient coming to a known cancer clinic is often frightened and on the defensive. He may try to justify his unhappy situation by rationalization. Too often he minimizes his negligence and magnifies his physician's errors, actual or presumed. He will forget the good advice he received and recall the unsound. Sometimes he will actually lie, possibly trying to obtain sympathy or special benefits of one type or another. However, the survey made by Pack and Gallo in 1938 contained similarly biased statements, since their data were obtained from case histories. Since this and the previous study are biased in the same direction, i. e. in favor of the patient and to the physician's disadvantage, they cannot represent the whole truth. But comparisons made on such data are quite valid.

Mention must also be made that the results in this study are not necessarily a cross section of cancer patients in this metropolitan area. The distribution of cancer by anatomic site in patients at Memorial Hospital is not the same as for the general population. Moreover, during the period in which this study was made, the Memorial Hospital was conducting a special drive for funds, with its attendant publicity. The latter must necessarily have had some effect on making the public temporarily more cancer conscious. This probably has decreased the patient responsibility and comparatively increased the physicians' responsibility for delay.

RESULTS

The data were first broken down into overall delay and culpability, as shown in the accompanying table.

It is evident that there has been a sizable decrease in delay on the part of the patients, whether considered by themselves or in conjunction with the group "patient and physician." On the other hand, the culpability of the physician alone has increased appreciably. If one considers this latter group with that of "patient and physician," i. e., cases in which the physician was responsible for delay either alone or in part, there has been a slight apparent increase from 35 to 38.6 per cent—actually of no statistical significance; at least there has been no improvement. The improvement in the "no delay" group from 20.7 to 29.4 per cent is wholly due to the decrease of the "patient alone" category from 1923-1938 to 1946. Stated in another manner, the patient is seeking help earlier but the physician does not appear to be taking advantage of the improved opportunity.

It was evident to those of us working in the examining clinic, even before this study was instituted, that many of the patients who had consulted a physician had not received an adequate examination. In order to see how much this was a factor in delay and in culpability, the cases were then broken down into four groups:

1. *Superficial.*—The superficial group consisted of those cancers that could be detected or suspected by a superficial examination. Examples of this group are cancer of the skin, lip, anterior part of the tongue and the like. One third of the group consisted of cancer of the skin.

2. *Breast.*—Cancers of the breast were placed in a separate category chiefly because of the publicity given to this form of cancer in the past.

3. *Thorough.*—The thorough group consisted of those cancers that could be detected or suspected by a careful history and complete physical examination. Examples of this are cancer of the floor of the mouth; of the posterior two thirds of the tongue; gynecologic cancer; cancer of the distal rectum and anus, and malignant lymphomas.

4. *Special.*—The special group consisted of those cancers that could be detected or suspected by a careful history and complete physical examination plus roentgenographic or endoscopic studies or both. Examples of this group are cancer of the lung, esophagus, stomach, upper rectum and colon; cancer of the kidney and bladder.

These data are portrayed in chart 1. This analysis is decidedly provocative and shows the following distinct trend: As one progresses from the superficial group, in which a lesion should be fairly obvious (if not to the patient at least to the physician) to the thorough and special groups, in which a more searching examination or special diagnostic studies are required to arrive at a diagnosis, the patient becomes decreasingly culpable while the blame assessable to the physician increases. Considered overall, the combined blame—"the physician and patient"—remains rather small in all the groups. The variations of the "no delay" category from group to group are interesting.

In almost one half of the breast cases (42.1 per cent) there was no delay. This suggests that the publicity given to cancer of the breast is affecting a large audi-

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ence. The delay in patients with superficial lesions is high and not surprising to those working in the field of cancer. The seemingly innocuous, painless cancer of the skin or lip that can be observed daily seems to cause little concern until finally for a variety of reasons (cosmetic, annoyance, repeated bleeding, pain or advice of friends or relatives, or the like) the patient will seek medical aid. Oddly enough, he may then be dismayed at the diagnosis of cancer and may resent being discommoded by the therapy. In this group the physicians' culpability is low and essentially the same as in the breast group.

Undoubtedly there are cases in the special group in which the first physician suggested that special diagnostic studies be carried out or that the patient be referred to a suitable hospital or clinic although this was refused or the suggestions were not carried out. During the period of this study there was still an unfavorable wartime ratio of physicians to patients. Those patients who had to depend on hospital clinics often found them overworked and understaffed and their laboratories in a similar position. These are factors—impossible to measure—that tend to mitigate the physician's poor showing to some extent.

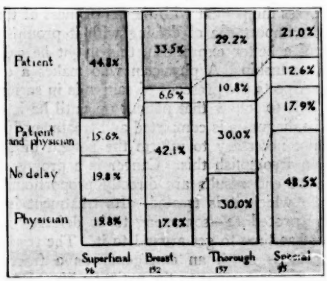

Chart 1.—Responsibility for delay in the diagnosis of cancer.

The data were then analyzed to determine the cause for delay among physicians—whether solely or partly responsible. There were 193 such instances. They are illustrated in chart 2.

Although each group is relatively small, several points may be made:

1. A good segment of the patients received improper treatment, judged by modern average standards.

2. Almost one half of the patients with cancer of the breast received improper advice. The usual purport of this was "If it doesn't bother you, don't bother it (the tumor)."

3. In almost one half of the cases in the special group there was an undue delay in making the diagnosis. Much of this was due to the assumption that the patient had a functional disorder or a benign disease. Many physicians are still unaware that early cancer in a relatively inaccessible part of the body can imitate a wide variety of functional and benign disorders. Many are still thinking in terms of the symptomatologic manifestations of late cancer.

The data were then analyzed in terms of delay in months between first symptoms and the start of treatment. This material did not permit the division into the three logical steps of first symptoms to first physician, first physician to diagnosis and diagnosis to therapy. However, the data were such that an accurate segregation into first symptoms to first physician and first physician to therapy could be made. They were analyzed by groups as described before. Five hundred

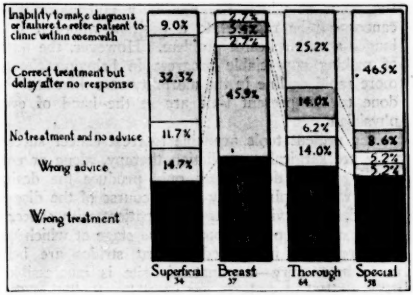

Chart 2.—Why did physicians delay?

cases of cancer are too few for averages to be significant because the time ranges are too great; hence, median times were used. Unfortunately, these latter measures are not comparable statistically, but at least they suggest trends. They are shown in chart 3.

It may be seen that as one progresses from a superficial lesion to one that is not so apparent, the delay in time on the part of the patient decreases, while that of the physician increases. This confirms the data depicted in chart 2. It should be called to mind that a median is a 50 per cent level. These data convey two ideas: the delay in time was not only quite long in the better half of the group shown, but also, in the other 50 per cent the delay was even greater.

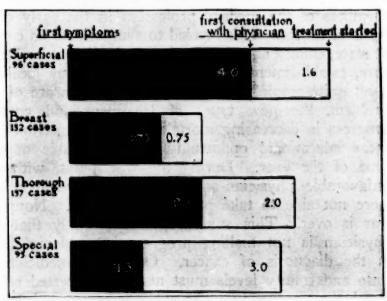

Chart 3.—The lapse of time between first symptoms and the start of definite treatment. The figures indicate the median time in months.

COMMENT

These data are not submitted to draw criticism to the medical profession's role in the fight against cancer. Errors in judgment, in diagnosis and in therapy are made by everyone. As long as medical practice remains a dynamic combination of art and science this will continue. The day of the push-button diagnosis is a long way off, and the universal test for cancer

remains but a hope. However, cancer remains the second leading cause for death in the United States. One cannot estimate its morbidity in terms of pain, anxiety and uncertainty, to say nothing of the economic loss to the nation as a whole. The final solution will be at hand only when the cause and prevention of cancer are determined. We have not progressed to the point at which the morbidity and mortality of cancer can be reduced to a position where it is no longer a major health problem. However, the means of making appreciable progress in bringing about a more rapid decline in the mortality rate than has been done to the present time are at the hand of every physician.

The present tools available to treat cancer successfully are surgical or radiation therapy, alone or combined. These devices can only produce the desired effect when applied early in the course of the disease. Indeed, the survival rate of the patient with cancer is almost directly proportional to the stage at which correct treatment is applied. Great strides are being made in surgery—no anatomic site is inaccessible—more radical procedures are possible. Radiation therapy is being applied better and is more standardized—its value and limitations are becoming more clear cut. The weak spot remaining in the offense against cancer is in the period before therapy—the lapse of time between first symptoms and the beginning of treatment. This includes the time from first symptoms to first physician, from first physician to diagnosis and from diagnosis to therapy.

Various societies realized early the importance of this factor of delay and have spent large sums of money toward the education of the public in the recognition of the early symptoms of cancer. The results of this study suggest that, compared to the period 1923-1938, significant progress is being made—people in this metropolitan area are seeking medical attention sooner. Coincidentally, these same organizations have directed campaigns toward encouraging the education of the members of the medical profession in the early diagnosis of cancer. This has led to symposiums on cancer at state, county and city levels, bombardment by literature, establishment of cancer clinics in many localities—all quite ample to keep the physicians aware of the problem, the new types of treatment and current progress in decreasing mortality. In the metropolitan areas educational opportunities are available at any time of the year. During the war years, with the unfavorable physician-patient ratio, many physicians were not able to take advantage of them. Now the war is over. This study suggests strongly that the physician is not making progress in reducing delay in the diagnosis of cancer. Organized medicine at state and county levels must make a concerted effort to achieve a reduction. The public is becoming increasingly aware of the good results that are possible in the treatment of early cancer. The practitioner must be in a position to obtain results that are commensurate with the progress that has been made.

The old saying "more is missed in medicine by not looking than by not knowing" is particularly applicable in the diagnosis of cancer today. Every patient is entitled to a careful complete history and physical examination. This does not imply that every patient must be subjected to expensive and exhaustive laboratory procedures. In over 80 per cent of the patients in this study a diagnosis of cancer could have been suspected or made by the initial physician if only a careful history and physical examination had been made. There is no substitute for these in the practice of medicine. Such a procedure requires a minimum of equipment and demands only care and time. There is no safe short-cut to the diagnosis of cancer. Certainly one way to make real progress in the reduction of delay is the encouragement of annual complete physical examinations in all patients, particularly those 40 years of age and over. This is the age at which the prevalence of cancer shows a rapid rise. The age 40 and over group comprises slightly less than 30 per cent of the total population and probably 50 to 60 per cent of the average physician's practice. If such a timed and complete careful physical examination were made on only half of these patients annually, a larger number of cancers and precancerous lesions could be found and cured while in their early stages. The immediate reduction in the morbidity and mortality of cancer could not fail to be striking.

While this factor could not be evaluated statistically, it was evident from the replies of these patients that the initial physician in numerous instances had failed to impress the patient with the seriousness of the illness and the importance of dealing with it promptly. For want of a better expression, this might be called lack of salesmanship. A physician who makes a diagnosis of or suspects the presence of cancer is in serious error if he fails to follow that patient up until he is satisfied that the diagnosis is completed and treatment is started. It is not necessary to inform the patient of the diagnosis to accomplish this. Cancer is a progressive disease, and end results are directly proportional to the stage in which it is treated. Its treatment is not an elective procedure—something to be deferred until the patient has time to get around to it. The treatment of cancer is as much an emergency as a fracture and much more important to the patient's life. Every physician must develop a technic whereby he can lead the patient quickly from diagnosis to treatment with a minimum of delay.

The hope of making appreciable immediate reductions in cancer mortality lies with the individual physicians. The cancer clinic can reach but relatively few persons. The physician, whether he be general practitioner or specialist, internist or surgeon, must operate his own cancer detection clinic in his office and in his hospital service, before any reduction in cancer mortality is made. This study suggests strongly that such is not being done. The average patient is improving, e. g., reducing the delay, whereas the physician has not made the progress that the public has a right to expect. The means for reducing morbidity and mortality due to cancer are at hand now. They remain to be used.

CONCLUSION

1. A study of the responsibility for the delay in the diagnosis of cancer, which was made in the first three months of 1946, suggests strongly that the patient is making progress in reducing the period of delay, although the physician is not.

2. The principal available means of reducing morbidity and mortality due to cancer are early diagnosis and treatment.

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THE SURGICAL SIGNIFICANCE OF HEMOGLOBIN DEFICIENCY IN PROTEIN DEPLETION

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Clinical experience with the recently wounded during World War II again emphasized that a deficiency of hemoglobin, among all the body proteins, is of particular surgical significance. It is our purpose in this discussion to focus attention on hemoglobin deficiency as a constant feature of systemic depletion in many types of chronic illness. In such progressive protein depletion the reduction in total circulating mass of red blood cells is masked at first by constriction of the plasma volume. This phase of protein deficiency, characterized by loss of weight, reduced blood volume and increased interstitial fluid volume, has been designated as chronic shock.[1] Obvious anemia and gross edema are later evidences of exhaustion of protein reserves.

In a study of battle casualties with chronically suppurating wounds, loss of weight as great as 50 pounds (23 Kg.) and obvious protein depletion were not associated with edema or apparent anemia.[2] The clinical course of these patients was characterized by diminished tolerance for surgical blood loss, delayed healing of wounds and retarded convalescence. Determinations by means of the plasma-dye-hematocrit method revealed generally constricted blood volume.[3] Plasma protein concentrations were normal or slightly increased, and hemoglobin concentrations and red blood cell counts were only moderately decreased. Actual deficits in the total circulating mass of blood proteins and red blood cells were variably masked by the reduction in plasma volume. Among the blood proteins, hemoglobin was most significantly reduced. It was felt that this reduced blood volume and masked anemia provided adequate explanation for the vascular collapse noted after minor blood loss during necessary surgical procedures. The vulnerability to hemorrhagic shock was overcome by preliminary transfusions of whole blood in quantities of 2,500 to 3,000 cc. It was on this basis that the term chronic shock was selected to designate this phase of protein depletion.

A continuation of these studies in civilian practice has permitted many interesting amplifications of the original thesis.[1] Reduced blood volume has been found in association with loss of weight due to chronic infections, malignant tumors, peptic ulceration, malnutrition and hepatic insufficiency. Significant reductions in blood volume and total circulating blood proteins have been recorded in association with as little as 10 pounds loss of weight, but there has been no correlation between the amount of weight lost and the deficiency in blood volume. Determinations of blood volume in healthy adults in our geographic locale have confirmed the standards of 45 cc. of plasma or 85 cc. of blood per kilogram of body weight for patients of usual bodily configuration.[4] Although a given individual may show a variation of 10 per cent from the expected standard volume, the observed plasma volume remains relatively constant in continued good health.[1] In the consideration of the patient with loss of weight, a point of difficulty arose as to whether the standard blood volume should be calculated on the basis of the observed weight or on the basis of the usual weight in health. It has been determined that the capacity of the vascular reservoir is not significantly diminished in protein depletion and that the standard blood volume should be estimated on the basis of the usual weight in health. The evidence for this is threefold: First, blood volume determinations after whole blood transfusions to the point of optimal clinical benefit have shown restoration of the standard blood volume for optimal weight; secondly, restoration of the blood volume to standard for the usual weight in health is accomplished without significant hemoconcentration, and, lastly, during convalescence the blood volume is restored to a level approximating the standard volume in usual health prior to significant gain in weight.

The existence of reservoirs for the storage of blood hemoglobin seems most unlikely. After whole blood transfusions there is quantitative increase in the total circulating red blood cell mass in the absence of continued bleeding. In contrast to this, the changes in plasma volume are variable. A considerable and sustained increase in plasma volume has been observed frequently but not regularly. Only rarely is the plasma volume restored to standard. These changes in plasma volume have a qualitative, but not quantitative, counterpart in the alterations in total circulating plasma protein. It seems reasonable to conclude that much of the new plasma protein given in transfusions of whole blood enters into the "metabolic pool" within Schoenheimer's[5] concept of "dynamic equilibrium." From a clinical point of view it is important to record the fact that the total circulating red blood cell mass can be restored by transfusions of whole blood, whereas plasma volume is rarely completely restored by transfusions alone.

Blood volume determinations have a dual clinical utility. First, masked deficiencies of the total circulating blood proteins are revealed. Secondly, blood transfusion therapy may be planned on a quantitative basis. The quantity of blood necessary to restore total circulating red blood cell mass to standard value in a patient with protein depletion uncomplicated by hemorrhage or bleeding averages 2,700 cc. Greater quantities are necessary if there has been acute or chronic blood

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From the Department of Surgery, Tulane University School of Medicine and the Division of Surgical Research, Alton Ochsner Medical Foundation (Dr. Lyons), and the Department of Physiology, Tulane University School of Medicine (Dr. Mayerson).

1. Clark, J. H.; Nelson, W.; Lyons, C.; Mayerson, H. S., and DeCamp, P. T.: Chronic Shock, Ann. Surg. **125:** 618-646 (May) 1947.

2. Lyons, C.; Queen, F. B.; Hollenberg, H.; Sweeney, J. S., and Ingraham, A. J.: Penicillin Therapy for Septic Compound Fractures in a Military Hospital, Interim Report Under Contract OEMemr 275 to Committee on Medical Research, Office of Scientific Research and Development, May 21, 1943.

3. Lyons, C.: Penicillin Therapy of Surgical Infections in the U. S. Army, J. A. M. A. **123:** 1007-1018 (Dec. 18) 1943.

4. Gregersen, M. I.: Practical Method for Determination of Blood Volume with Dye T-1824: Survey of Present Basis of Dye Method and Its Clinical Applications, J. Lab. & Clin. Med. **29:** 1266-1286 (Dec.) 1944.

5. Schoenheimer, R.: Dynamic State of Body Constituents, Cambridge, Mass., Harvard University Press, 1942.

loss. The daily dosage of blood has been restricted to 1 liter in the absence of acute bleeding. There has been no evidence of acute overloading of the vascular bed. In anticipation of major surgical procedures the red blood cell mass has been restored to or slightly above standard. Blood lost during operative procedures has been replaced concomitantly. Under this program of blood volume restoration by transfusion of whole blood it has been unnecessary to utilize other methods of protein replacement to prepare depleted patients to withstand the trauma of indicated surgical procedures. Obviously, this is only one phase of preoperative management and should not overshadow other important considerations.

Correction of hemoglobin deficits by blood transfusion rather than by dietary measures is almost mandatory in the depleted patient. There is a definite ceiling on the rate of both hemoglobin synthesis and red blood cell regeneration.[6] A defect in hemoglobin synthesis has been identified in chronic infections.[7] A comparable deficiency is almost surely present in malignant disease.[8] At least in these two important categories of disease, prompt surgical correction of the underlying cause for anemia is essential for the production of new red blood cells by the body. Early surgical intervention is also necessary to arrest the loss of protein in wound suppuration. Further, we are of the opinion that much of the available new protein may be deviated to the growth of a malignant tumor. Hence, in the management of chronic infections and malignant tumors, it is proposed that especial attention to dietary intake of food protein should be reserved for the period following surgical treatment.

There can be little question that total correction of blood hemoglobin deficits is desirable in preparation for surgical operation. Following operative procedures, the demand for whole blood is considerably lessened. Animal experiments have established the existence of certain priorities for the selective replacement of specific body proteins in the following order: (1) hemoglobin,[9] (2) tissue protein and plasma globulin and (3) plasma albumin.[10] Synthesis of new blood proteins may continue to deplete already deficient protein reserves to present the paradox of red blood cell regeneration in the face of progressive loss of body weight.[11] However, in patients, persistence of anemia is detrimental to healing of wounds. If the blood volume is maintained by transfusions, wounds heal satisfactorily even in the presence of continued loss in weight.[12] Such observations suggest that, following correction of red blood cell deficiencies, the demands for protein for healing of wounds may further deplete protein reserves in the body tissues. Healing of a wound thus assumes secondary importance only to repair of hemoglobin deficits in the bodily economy. The surgical implications for early attempts at wound repair are readily apparent.[13]

Experiments on normal animals indicate that priority of synthesis of newly available protein is assigned to the fabrication of digestive enzymes.[14] In depleted animals replenishment of protein reserves, as evidenced by gain in weight, is dependent on absorption of food proteins.[15] In our clinical experience we have been constantly impressed by the improved appetite and rapid gain in weight following transfusion correction of red blood cell deficits and early closure or healing of wounds.

COMMENT

It has been shown that chronically ill patients present a syndrome characterized by (1) loss of weight, (2) diminished tolerance for loss of blood during necessary surgical procedures, (3) delayed or faulty healing of wounds, (4) retarded convalescence, (5) reduced blood volume with a deficiency in total circulating red blood cell mass masked by constriction of the plasma volume and (6) increased interstitial fluid volume. The terminal phases of this pattern of protein depletion are characterized by gross edema and obvious anemia.

In the treatment of this syndrome, whole blood transfusions in sufficient quantity to restore the total circulating red blood cell mass to standard values are effective in preparing the patient for any indicated surgical procedure. If standard values are maintained postoperatively, the wound heals satisfactorily and food protein is utilized to restore body weight and expedite convalescence. As the two cardinal features of this concept are the reduced blood volume and the therapeutic response to whole blood transfusions, the syndrome has been designated as chronic shock.

It has further been pointed out that prompt surgical management of the pathologic process is often essential in these chronically ill patients. Thus, blood transfusions and indicated surgical procedures comprise initial treatment in the surgical patient with protein deficiency. It has been learned that both blood transfusion and early surgical intervention are important in resuscitation in hemorrhagic shock; an analogy exists in the nutritional resuscitation of the patient with chronic shock due to protein deficiency.

6. Fowler, W. M., and Barer, A. P.: Rate of Hemoglobin Regeneration in Blood Donors, J. A. M. A. **118:** 421-427 (Feb. 7) 1942. Alstead, S.: Rate of Blood Regeneration After Haemorrhage, Lancet **1:** 424-426 (April 3) 1943. Co Tui; Bartter, F. C.; Wright, A. M., and Holt, R. B.: Red Cell Reinfusion and Frequency of Plasma Donations, J. A. M. A. **124:** 331-336 (Feb. 5) 1944.

7. Cartwright, G. E.; Lauritsen, M. A.; Jones, P. J.; Merrill, I. M., and Wintrobe, M. M.: The Anemia of Infection: I. Hypoferremia, Hypercupremia and Alterations in Porphyrin Metabolism in Patients, J. Clin. Investigation **25:** 65-80 (Jan.) 1946.

8. Taylor, A., and Pollack, M. A.: Hemoglobin Level and Tumor Growth, Cancer Research **2:** 223-227 (March) 1942. Taylor, D. R.; McAfee, M., and Taylor, A.: The Effect of Yolk Sac Cultivated Tumors on Hemoglobin Level in Embryonic Chick, Cancer Research **3:** 542-545 (Aug.) 1943. Clark, Nelson, Lyons, Mayerson and DeCamp.[1]

9. Whipple, G. H., and Madden, S. C.: Hemoglobin, Plasma Protein and Cell Protein—Their Interchange and Construction in Emergencies, Medicine **23:** 215-224 (Sept.) 1944.

10. Weech, A. A.: The Significance of the Albumin Fraction of Serum: Harvey Lecture, Bull. New York Acad. Med. **15:** 63-91 (Feb.) 1939. Zeldis, L. J.; Alling, E. L.; McCoord, A. B., and Kulka, J. P.: Plasma Protein Metabolism—Electrophoretic Studies; Chronic Depletion of Circulating Proteins During Low Protein Feeding, J. Exper. Med. **82:** 157-179 (Sept.) 1945.

11. Whipple, G. H.; Miller, L. L., and Robscheit-Robbins, Frieda S.: Raiding of Body Tissue Protein to Form Plasma Protein and Hemoglobin, J. Exper. Med. **85:** 277-286 (March) 1947.

12. Gage, M.; Lyons, C., and DeCamp, P. T.: Essential Therapeutic Adjuvants in the Surgical Arrest of Wolff-Israel Actinomycosis, Ann. Surg., to be published.

13. Churchill, E. D.: Surgical Management of the Wounded in the Mediterranean Theater at the Time of the Fall of Rome, Ann. Surg. **120:** 268-283 (Sept.) 1944. Lyons, C.: The Philosophy of Wound Management in the United States Army, Bull. Am. Coll. Surgeons **30:** 13-14 (Feb.) 1945.

14. Tarver, H., and Schmidt, C. L. A.: Radioactive Sulfur Studies: Synthesis of Methionine; Conversion of Methionine Sulfur to Taurine Sulfur in Dogs and Rats; Distribution of Sulfur in Proteins of Animals Fed Sulfur or Methionine; Experiments in Vitro with Sulfur and Hydrogen Sulfide, J. Biol. Chem. **146:** 69-84 (Nov.) 1942. Block, K.: The Metabolism of 1(+)-arginine in the Rat, ibid. **165:** 469-476 (Oct.) 1946. Friedberg, F.: Activity of Protein Synthesis by the Intestine, Science **105:** 314-315 (March 21) 1947.

15. Miller, L. L.; Robscheit-Robbins, Frieda S., and Whipple, G. H.: Anemia and Hypoproteinemia, J. Exper. Med. **85:** 267-275 (March) 1947.

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ABSTRACT OF DISCUSSION

DR. EVERETT I. EVANS, Richmond, Va.: The term "chronic shock" is improperly constructed. The two words are fundamentally incompatible. Ever since the introduction of the word "shock" into the surgical literature about 1814, it has denoted an acute condition, a sudden debilitating effect. Surgically, the condition has been considered a state distinctly opposite to that designated as chronic. Dr. Lyons has called attention to the usefulness of whole blood transfusions in the restoration to normal of the reduced blood volume of the chronically ill patient. To discover the extent of protein and hemoglobin deficiencies in surgical patients one must abandon simple routine laboratory procedures and employ instead blood volume methods. Studies have revealed that many patients with normal blood concentrations of albumin and hemoglobin have deficiencies of total circulating protein and hemoglobin because of a relative to pronounced depletion of blood volume. Dr. Forbes and I have demonstrated that about 50 per cent of apparently normal patients have a deficit in total circulating albumin; the situation was much worse in respect to hemoglobin in that about 85 per cent of these patients had a deficit in total circulating hemoglobin. If one does routine laboratory examinations, everything above 14.5 Gm. of hemoglobin would have to be considered in the normal range. I am not certain that it is practical to restore to normal levels preoperatively the total circulating hemoglobin of all such patients. Our observations indicate that in some patients, such as those with lung abscess, for example, very large amounts—6 to 8 liters—of whole blood may be required. This may represent actually a wastage of whole blood. My inclination is to give two or three transfusions in the immediate preoperative period, supply adequate amounts of whole blood during the operation to replace surgical blood loss and prevent shock, and then postoperatively to administer whole blood, daily if necessary, to maintain the blood hemoglobin concentration above 85 per cent at all times. It seems to me that the patients utilize more efficiently hemoglobin administered according to the latter scheme. Dr. Bigger and I give regularly large and frequent whole blood transfusions. Studies now in progress, we believe, will support our impression that red cell hemoglobin is a valuable source of protein.

DR. HYMEN S. MAYERSON, New Orleans: In preparing a patient for operation, the feeling in the past has been that protein feeding is valuable as a means of building up a protein store which will enable the patient to go through the operation and minimize the negative nitrogen balance which so often appears after the operation. Our experiments emphasize that many of these patients have a definite and significant protein deficit before operation, manifest as hemoglobin deficiency. This deficit must be corrected and additional attempts made to achieve and maintain an optimal protein level before operation. If we assume that something has happened to disturb the normal pattern of protein utilization and that these patients are unable to synthesize hemoglobin in the usual manner, the administration of proteins as such may prove disappointing. Wintrobe has suggested that in chronic sepsis there is a hypoferremia. In many of our patients it is probable that inability to make or utilize globin is an additional factor. It would seem logical to supply the deficiency directly as hemoglobin and insure the fact that the patient will have an adequate hemoglobin level. This has the additional advantage of sparing ingested protein for possible tissue protein synthesis. Keys and his colleagues have shown that a hemoglobin deficit develops when normal persons are put on a semistarvation diet for twenty-four weeks or longer. Significant is the fact that when these persons are returned to an optimum recovery diet it takes three to six months before hemoglobin levels have returned to prestarvation levels. Certainly in chronically debilitated patients we cannot hope to work miracles by dietary measures in a week or two. Our experiments have raised many questions. What is the defect which prevents adequate hemoglobin formation in these patients? Is it in the intestines, a failure to absorb essential amino acids, or is it a failure of utilization? Does the carcinomatous growth have an abnormal appetite? Where does the protein go in patients in positive nitrogen balance who show no gain in weight?

THE INCUBATION PERIOD IN HUMAN POLIOMYELITIS AND ITS IMPLICATIONS

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The incubation period in human poliomyelitis is not subject to exact analysis because of gaps in present knowledge concerning the mode of spread of the disease. Thus it is unknown what constitutes adequate exposure to virus in order to produce human infection, as well as what form (or forms) exposure may take. Furthermore, not only is there difficulty in knowing at what point the incubation period begins but there is some confusion about measuring its termination, i. e., a lack of agreement as to which shall be regarded as the first day of the clinical disease. It will be our purpose in this paper to review some of the existing data concerned with the incubation period in human poliomyelitis and to consider also its significance in terms of the pathogenesis of the disease.

Estimated Incubation Period in Human Poliomyelitis

Author	Year	Case Epidemiology	Estimate in Days
Wickman [1]	1913	Contact with known case	6 to 10
Wernstedt [2]	1917	Contact with known case	4 to 12
Aycock and Luther [3]	1929	Contact with known case	6 to 20
Casey [4]	1942	Contact with known case	5 to 35
Dingman [5a]	1916	? Milk-borne	14 to 18
Knapp, Godfrey and Aycock [5b]	1926	? Milk-borne	7 to 18
Aycock [5c]	1927	? Milk-borne	7 to 14
Ayer [6a]	1929	Post-tonsillectomy	5 to 10*
Aycock and Luther [3]	1929	Post-tonsillectomy	7 to 18
Stillerman and Fischer [6b]	1938	Post-tonsillectomy	10 to 22
Ontario Health Dept. Reports [6c]	1938	Post-tonsillectomy	7 to 26
Eley and Flake [6d]	1938	Post-tonsillectomy	7 to 30
Fischer, Stillerman and Marks [6e]	1941	Post-tonsillectomy	3 to 26
Krill and Toomey [6f]	1941	Post-tonsillectomy	13 to 15

* These figures represent the intervals between tonsillectomy and the onset of poliomyelitis.

The incubation period in poliomyelitis is generally given in textbooks as ranging from six to twelve days, averaging ten days. That these figures are somewhat arbitrary and not well established is indicated by the variety of estimates which have been mentioned in the literature, as listed in the accompanying table. Wickman [1] suggested six to ten days; Wernstedt [2] four to twelve; Aycock and Luther [3] six to twenty, and Casey [4] five to thirty-five days. Such estimates have been based largely on observation of illnesses developing among contacts of known cases, and to some extent on analogies with the experimental disease. In the outbreaks which have been thought to be milk-borne, estimates have ranged between seven and eighteen days.[5] Post-

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1. Wickman, I.: Acute Poliomyelitis, Nervous and Mental Disease Monograph 16, New York, Nervous and Mental Disease Publishing Company, 1913.

2. Wernstedt, W.: Clinical and Epidemiological Study of the Second Great Epidemic of Poliomyelitis in Sweden, 1911-1913, Svenska lak.-sällsk. förhandl. **43:** 1097-1409, 1917.

3. Aycock, W. L., and Luther, E. H.: The Incubation Period of Poliomyelitis, J. Prev. Med. **3:** 103-120 (March) 1929.

4. Casey, A. E.: The Incubation Period in Epidemic Poliomyelitis, J. A. M. A. **120:** 805-807 (Nov. 14) 1942.

5. (*a*) Dingman, J. C.: Report of a Possibly Milk-Borne Epidemic of Infantile Paralysis, New York State J. Med. **16:** 589-590 (Dec.) 1916. (*b*) Knapp, A. C.; Godfrey, E. S., Jr., and Aycock, W. L.: An Outbreak of Poliomyelitis Apparently Milk-Borne, J. A. M. A. **87:** 635-639 (Aug. 28) 1926. (*c*) Aycock, W. L.: Milk-Borne Epidemic of Poliomyelitis, Am. J. Hyg. **7:** 791-803 (Nov.) 1927.

tonsillectomy cases[6] have been included because the data on the interval between operation and the onset of symptoms seem pertinent in several ways. They resemble the figures based on contact with known cases, and they suggest that the natural incubation period is not shorter than the post-tonsillectomy period.

The possible wide variation in these figures—ranging from a few days to three to five weeks—raises the question as to how, in a given group of presumably related cases, the primary and secondary cases are to be identified. It could even be expected that in some instances the actual primary case will not be the first one to exhibit the clinical disease; and conversely, the first apparent case may actually be secondary to a case which does not show clinical signs until some later date. In fact, the report by Brown, Francis and Pearson[7] of the detection of virus in the stools of a boy nineteen days before he manifested paralytic poliomyelitis makes it conceivable that a family or community outbreak lasting several weeks could be due entirely to exposure of all patients at the same time.

The difficulty in evaluating the incubation period in human poliomyelitis arises in part because the clinical course is variegated and there is no uniform interpretation among clinicians as to which is the first day of disease. Figure 1 illustrates the more commonly

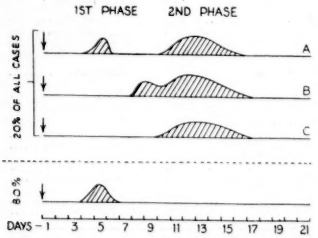

Fig. 1.—The common clinical forms of poliomyelitis (modified from Cecil's Textbook of Medicine, 1947). Shaded areas indicate periods of fever. Arrows on the left mark the hypothetic time of exposure. The abortive form is estimated as representing 80 per cent of all cases, those with central nervous system signs 20 per cent. *A* represents the "dromedary" form; and *B* and *C*, other variations described in the text.

observed clinical forms. It is estimated that 80 per cent of the patients exhibit only mild and brief symptoms; their illnesses are so slight that many are never even seen by a physician.[8] The remaining 20 per cent, the frank cases, comprise the majority of those which are diagnosed poliomyelitis. About half of these have a diphasic "dromedary" course indicated as *A* in figure 1. In this form of the disease there is a brief, preliminary first phase illness characterized by nonspecific symptoms—fever, sore throat, vomiting and headache. Then follows a period of well-being lasting from one to four days or even as long as a week or more, and later, the appearance of the second phase, in which there is again fever and for the first time clinical evidence of involvement of the central nervous system—stiff neck, stiff back, sometimes reflex changes and paralyses. The frequency with which the various symptoms occur in the two phases is shown in figure 2. The occurrence

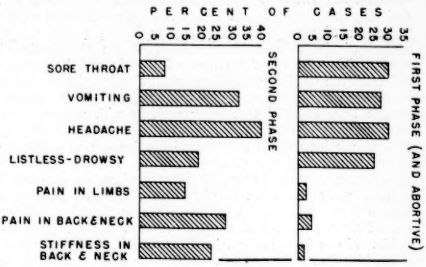

Fig. 2.—Frequency of various symptoms in poliomyelitis during the first and early second phases of the "dromedary course" and in the mild abortive form. (These figures were taken from a study of 195 cases of poliomyelitis by Paul, Salinger and Trask.)

of sore throat as a prominent first phase symptom and its comparative rarity in the second phase may even have some diagnostic value in determining the stage of the disease with which one is dealing.

In a patient with a diphasic course such as has been described there is a possibility of at least two interpretations as far as the first day of disease is concerned. It has been our practice to consider the incubation period as the interval between exposure and the appearance of first phase symptoms, regardless of the clinical form which the disease may assume and even if the first phase symptoms are slight. This is not a general practice, for some clinicians consider the incubation period to be the time between exposure and the second phase, i. e. the onset of clinical signs of involvement of the central nervous system. That the results obtained differ by one to four or more days, depending on which of

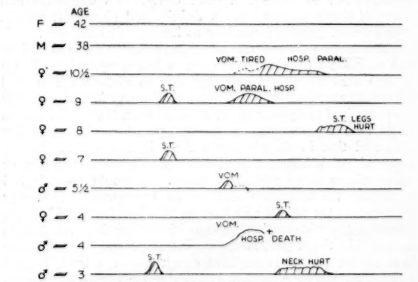

Fig. 3.—A family outbreak of poliomyelitis. Shaded areas indicate periods of fever. S. T., sore throat; Vom., vomiting; Paral., paralysis, and Hosp., hospitalized.

these measurements is used, has been mentioned by workers in this laboratory[9] and by Casey.[4]

Other clinical forms of poliomyelitis, labeled *B* and *C* in figure 1, illustrate cases in which first and second phases of the disease are partially superimposed, or the

6. (*a*) Ayer, W. D.: Poliomyelitis, Proc. Internat. Assemb. Inter-State Post Grad. M. A. North America (1928) 1929, pp. 319-328. (*b*) Stillerman, M., and Fischer, A. E.: Acute Bulbar Poliomyelitis Following Recent Tonsillectomy and Adenoidectomy, Am. J. Dis. Child **56:** 778-786 (Oct.) 1938. (*c*) Reports on Poliomyelitis in Ontario, Department of Health, Province of Ontario, March 1938. (*d*) Eley, R. C., and Flake, C. G.: Acute Anterior Poliomyelitis Following Tonsillectomy and Adenoidectomy, with Special Reference to the Bulbar Form, J. Pediat. **13:** 63-70 (July) 1938. (*e*) Fischer, A. E.; Stillerman, M., and Marks, H. H.: Relation of Tonsillectomy and of Adenoidectomy to the Incidence of Poliomyelitis, with Special Reference to Bulbar Form, Am. J. Dis. Child. **61:** 305-321 (Feb.) 1941. (*f*) Krill, C. E., and Toomey, J. A.: Multiple Cases of Tonsillectomy and Poliomyelitis, J. A. M. A. **117:** 1013 (Sept. 20) 1941. (*g*) Aycock.[2]

7. Brown, G. C.; Francis, T., Jr., and Pearson, H. E.: Rapid Development of Carrier State and Detection of Poliomyelitis Virus in Stool Nineteen Days Before Onset of Paralytic Disease, J. A. M. A. **129:** 121-123 (Sept. 8) 1945.

8. Paul, J. R., and Trask, J. D.: Observations on the Epidemiology of Poliomyelitis, Tr. Coll. Physicians Philadelphia **54:** 158-162, 1932.

9. Paul, J. R.; Salinger, R., and Trask, J. D.: "Abortive" Poliomyelitis, J. A. M. A. **98:** 2262-2268 (June 25) 1932.

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first phase is missed or does not occur. In these instances the incubation period by clinical standards necessarily becomes the interval between exposure and the appearance of the phase of illness associated with signs of involvement of the central nervous system.

Family outbreaks of poliomyelitis present opportunities for study of these various clinical patterns. A family manifesting several of the common clinical forms of the disease was studied recently by a member of the Yale Poliomyelitis Study Unit. This family consisted of a mother and father and eight children, and among these eight children presumably 8 cases of poliomyelitis occurred (fig. 3). Since no virus studies were attempted none of the abortive cases can be considered proved, but circumstances strongly suggest that the illnesses were all poliomyelitis. One child, aged 9 years, had a typical dromedary course with the first phase August 6, followed by the second phase four days later, ending with paralysis. Two other children, aged 7 years and 3 years, had first phase symptoms more or less simultaneously, but the child of 7 recovered completely with no recurrence of symptoms, whereas the child of 3 had stiff neck and fever after a long interval of ten days. Second phase symptoms probably began about the same time in 3 children, aged 10½, 9 and 4 years. Two of these had experienced no first phase symptoms. In the child aged 4 years, one of twins, there rapidly developed bulbar signs, and death ensued. In addition 2 other children, aged 8 years and 4 years (the second twin), had minor symptoms several days later than did the rest of the family.

What were the incubation periods in these various cases? Many features suggest a common time of exposure. These are the compactness of the outbreak and the fact that both of the children having "dromedary" courses had first and second phases at about the same time while in the 2 paralytic cases without prodromal phases the patients exhibited their paralytic signs at the same time as did the 2 with dromedary courses. It is possible, nevertheless, although much less likely, that several of the cases could be secondary ones. The history of this family, with its variety of types of onset, illustrates the difficulties which are inherent in the problem of estimating the incubation period on the basis of clinical data.

The complexities are further brought out by the observations of Brown, Francis and Pearson [7] mentioned previously. These authors isolated virus from the stools of a boy nineteen days before paralytic poliomyelitis developed! This observation also raises other questions, namely, what does the incubation period mean in terms of the pathogenesis of poliomyelitis, and what pathogenic processes are reflected in the various clinical forms outlined above (fig. 1 *A*, *B* and *C*)? Draper [10] interpreted the latter problem more than twenty years ago by designating the first phase of the dromedary form, as the period of "systemic reaction to generalized infection; the second a highly specialized reaction of the meninges, brain and cord . . ." According to this interpretation the incubation period would be the time between exposure and the beginning of the systemic reaction, a view which is only partially in keeping with our own present interpretation. Thus the incubation period might be regarded as the interval between the introduction of virus into the body and the appearance of clinical symptoms resulting from its implantation in a number of tissues of the host. These tissues include not only the pharynx and the intestinal tract but the central nervous system and perhaps other anatomic sites. They have been illustrated schematically in figure 4, in which the diagram indicates possible courses of events. Whether the virus enters by way of the mouth (or nose) and goes thence to the pharynx, it probably appears within the upper and/or lower portion of the gastrointestinal tract within seventy-two hours.[11]

Furthermore, it seems that implantation in the wall of the pharynx and intestinal tract occurs soon after the introduction of virus into the body. In these sites it probably multiplies—or it may multiply elsewhere—and is excreted with the feces. But whether or not these activities are always accompanied by concurrent invasion of the central nervous system is not known.

The way in which paralytic poliomyelitis follows within a few days to several weeks after tonsillectomy in a person who presumably already harbors the agent in his throat makes it seem possible that virus can remain localized in the throat and spread to the central nervous system when the host-virus equilibrium is upset by local peripheral trauma. In the case of tonsillectomy the time interval between the exposure of cut nerve endings at operation and signs of disease of the central nervous system is compatible with spread of virus via

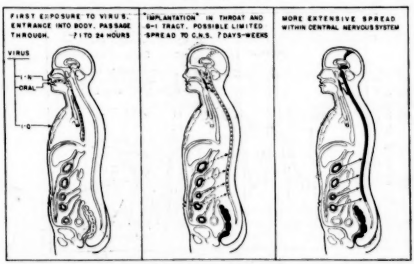
FIRST EXPOSURE TO VIRUS; ENTRANCE INTO BODY, PASSAGE THROUGH. 7 TO 24 HOURS
"IMPLANTATION" IN THROAT AND G-I TRACT. POSSIBLE LIMITED SPREAD TO C.N.S. 7 DAYS-WEEKS
MORE EXTENSIVE SPREAD WITHIN CENTRAL NERVOUS SYSTEM
VIRUS
I.N.
ORAL
I.Q.

Fig. 4.—The pathogenesis of human poliomyelitis—a possible course of events when virus is introduced into the body for the first time. Blackened areas indicate the localization of virus in anatomic sites (based on clinical and autopsy studies). Dotted areas indicate sites where the virus *may* be located. The middle panel represents the situation in a mild abortive attack and in the first phase symptoms of a dromedary case. The panel on the right represents the frank case. Presumably the processes represented in these diagrams may be arrested at any one of the three stages depicted. I.N., intranasal; I.Q., intracutaneous. Dr. R. Ward assisted in the preparation of this diagram.

the nerves to the medulla. Nevertheless another explanation is possible, in that local peripheral trauma may be reflected in the corresponding areas of the cord in the form of central changes which favor activation of virus already present in the central nervous system.

Studies in the experimental disease provide evidence on this question. Bodian and Howe [12] have demonstrated the presence of lesions in the central nervous system of orally infected chimpanzees who had inapparent or abortive poliomyelitis. If one can draw analogies from the experimental disease, this finding may indicate that early invasion of the central nervous system is common, so that by the time virus is present in the stools it may be presumed to be present in the

10. Draper, G.: Acute Poliomyelitis, in Nelson's Loose-Leaf Living Medicine, New York, Thos. Nelson & Sons, 1926, chap. 31, pp. 67-84.

11. (*a*) Evidence for this is based on the fact that poliomyelitis virus fed to chimpanzees has been recovered readily from their stools one to two days later (Melnick, J. L., and Horstmann, D. M.: Active Immunity to Poliomyelitis in Chimpanzees Following Subclinical Infection, J. Exper. Med. **85**: 287-303 [March] 1947). (*b*) Virus has been introduced into the skin of monkeys and chimpanzees and found in their stools as soon as three days after inoculation—several days before clinical signs of disease appeared (Melnick, J. L.: The Recovery of Poliomyelitis Virus from the Stools of Experimentally Infected Monkeys and Chimpanzees, J. Immunol. **53**: 277-290 [July] 1946).

12. Bodian, D., and Howe, H. A.: Non-Paralytic Poliomyelitis in the Chimpanzee, J. Exper. Med. **81**: 255-274 (March) 1945.

central nervous system as well.[12] If such is the case, it is conceivable that the first phase of the dromedary type of the human disease or the abortive illness is frequently associated with some invasion of the central nervous system. The observation made by Andelman, Fishbein, Casey and Bundesen [13] on the elevation of the protein level of the cerebrospinal fluid several weeks after the acute infection in abortive poliomyelitis strengthens this supposition, but it remains to be proved. The history of rapid—almost immediate—onset of paralytic poliomyelitis in man following severe exercise is a phenomenon which also suggests that in persons so affected the virus is already present in the central nervous system; exercise is the factor which produces physiologic changes capable of upsetting the host-virus equilibrium, thus allowing virus to spread widely within the central nervous system and cause damage sufficient to produce clinical signs of disease.

In experimental poliomyelitis variation in the incubation period is common, depending to some extent on the animal species, the dose, the route of inoculation and the strain of virus used. Rhesus monkeys, when inoculated intracerebrally with recently isolated human strains, usually manifest fever and paralysis between six and fourteen days after inoculation. If the monkey-

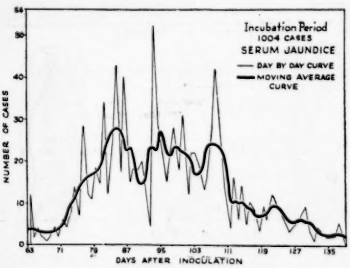

Fig. 5.—The variation in incubation period of homologous serum hepatitis in 1,004 persons inoculated with the same dose of the same lot of the same material on the same day (from Parr [19]).

adapted MV strain is employed the incubation period is shorter—three to six days. The same difference between the two types of strains was noted by Howe and Bodian [14] when rhesus monkeys were inoculated by way of the peripheral nerves, the fresh strains producing paralysis in eight to thirteen days and the MV strain in four to five days. Howe and Bodian, by the administration of virus-containing human stools orally and by stomach tube produced paralytic poliomyelitis in 2 chimpanzees after incubation periods of twelve and twenty-eight days, respectively.[14] An infant rhesus monkey has been infected by the oral route nineteen days after its first and six days after its last exposure to virus.[15] The extremes reported have ranged from two days when virus-containing human stool suspensions were introduced directly into the lumbar cord of rhesus monkeys [16] to seventy-one days in a monkey inoculated intracerebrally.[16]

In another host, namely mice, irregularities are still greater. Using the Lansing rodent-adapted strain and inoculating the animals intracerebrally, the incubation period is usually between two and ten days, but occasionally it has been noted to be as short as twenty-four hours and as long as ninety-three days.[17] With the rodent adapted Y-SK strain it varies between two and eighty-two days in our laboratory. Although the majority of animals become paralyzed three to six days after inoculation, a significant number become paralyzed as late as forty to fifty days. At times there is a grouping of illnesses about certain days, resulting in a diphasic curve which resembles that seen in epidemic diseases showing primary and secondary waves of cases. Similar observations have been made with the Lansing strain in mice.[18]

These results with the experimental disease indicate wide variations in the response of individual hosts to an infectious agent introduced under the same conditions, and there is reason to believe that in the human host similar variations occur. This variability of response is not often subject to measurement in the human host in any disease, but the occurrence of homologous serum hepatitis in members of the armed forces provided such an opportunity. Parr [19] has described an outbreak which occurred at Camp Polk in 1942. On February 27, over 5,000 soldiers were inoculated with a yellow fever vaccine containing human serum. As the result of an icterogenic agent in the vaccine 1,004 cases of homologous serum hepatitis developed among the soldiers, all of whom had been injected on the same day with the same dose of the same lot of material. Figure 5, taken from Parr, illustrates the incubation period in these cases. It ranged from sixty-three to one hundred and thirty-seven days, and the curve is not unlike those which may be drawn by plotting the onset of cases in a number of epidemics of differing types. Although homologous serum hepatitis is a disease which differs from poliomyelitis in that it characteristically has an extremely long incubation period, these figures nevertheless bring out a factor common to all infectious disease, namely, the role of variation in the response of a host to an infectious agent. There is evidence to suggest that this might be an important factor in human poliomyelitis.

COMMENT AND SUMMARY

While analogies may be drawn between the observed incubation period in experimental poliomyelitis and that estimated for the human disease, exact information concerning the latter cannot be obtained in this fashion. It should be emphasized, however, that poliomyelitis virus is capable of great variability in behavior in various hosts under different conditions; in the human disease the interval between apparent exposure and the onset of clinical symptoms and signs has been observed to be as short as three and as long as thirty-five days, with many cases developing after a four to ten day period. But unsolved problems as to what constitutes exposure, what role latency may play and what the pattern of pathogenesis is, represent some of the factors to be elucidated before exact knowledge of the incubation period in human poliomyelitis can emerge.

13. Andelman, M. B.; Fishbein, W. I.; Casey, A. E., and Bundesen, H. H.: Spinal Fluid Protein in the Retrospective Diagnosis of Subclinical Poliomyelitis, South. M. J. **39**: 706-718 (Sept.) 1946.
14. Howe, H. A., and Bodian, D.: Neural Mechanisms in Poliomyelitis, New York, The Commonwealth Fund, 1942.
15. Horstmann, D. M.; Melnick, J. L.; Ward, R., and SaFleitas, M. J.: Susceptibility of Infant Rhesus Monkeys to Poliomyelitis Virus Administered by Mouth, J. Exper. Med., to be published.
16. Melnick, J. L.; Horstmann, D. M., and Ward, R.: Intraspinal Inoculation of Infective Human Stools as a Method of Producing Poliomyelitis in the Monkey, J. Infect. Dis. **77**: 13-24 (July-Aug.) 1945.
17. Armstrong, C.: Choriomeningitis and Poliomyelitis, in Harvey Lectures, 1940-1941, Baltimore, Williams & Wilkins Company, 1941, vol. 36, pp. 39-65.
18. Young, L. E., and Merrell, M.: Mouse-Adapted Lansing Strain of Poliomyelitis Virus: II. A Quantitative Study of Certain Factors Affecting the Reliability of the Neutralization Test, Am. J. Hyg. **37**: 80-92 (Jan.) 1943.
19. Parr, L. W.: Host Variation in the Manifestation of Disease, with Particular Reference to Homologous Serum Jaundice in the Army of the United States, M. Ann. District of Columbia **14**: 443-449 (Oct.) 1945.

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THE EMERGENCY TREATMENT OF VASCULAR OCCLUSIONS

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Rochester, Minn.

This discussion will be limited to consideration of sudden peripheral arterial occlusion (embolism and thrombosis), to acute venous thrombosis and to embolism of the pulmonary arteries. The substance of this paper is the result of the observations of my associates Drs. N. W. Barker, E. A. Hines Jr. and Walter F. Kvale, as well as of my own observations. I may remark, parenthetically, that the use of anticoagulant agents in acute myocardial infarction is now well established, although final evaluation of their use must await further experience, such as that being acquired by workers under the supervision of the American Heart Association. It is safe to conclude now that the anticoagulant agents heparin and dicumarol may be used with safety in acute myocardial infarction. The five clinical reports available indicate, in the aggregate, that the use of anticoagulant agents lessens the percentage of deaths from acute myocardial infarction and sharply diminishes the incidence of arterial embolism, venous thrombosis and additional myocardial infarction after acute myocardial infarction.[1] It is a method of treatment which has gained increasing favor in the past two years.

There has been little new in the treatment of acute arterial occlusion (thrombosis and embolism) of the cerebral circulation. This is a field for study in the future. Perhaps intensive consideration of this problem will be as productive, at least in part, as has that of the acute vascular occlusions to be considered in this presentation.

THE USE OF HEPARIN AND DICUMAROL

Because administration of the anticoagulant agents heparin and dicumarol is an integral and important part of the treatment of the acute venous and arterial occlusion to be considered subsequently, it is well, first, to have a clear understanding of the use of them. Both are used for the purpose of halting intravascular thrombosis. The use of heparin is advantageous in that it has a quick effect on coagulability of the blood, in that its effect quickly ceases when administration is discontinued and in that the drug can be administered without laboratory control. It has the disadvantages of being expensive (about $9 a day) and of requiring parenteral administration. It can be administered effectively by repeated single intravenous injections of 50 mg. every four hours. A combination of heparin with gelatin, dextrose and glacial acetic acid (Pitkin menstruum) may be injected subcutaneously; the heparin is then absorbed slowly, so that injection carried out every two or three days may have sufficient anticoagulant effect.[2] Heparin should be used whenever a quick effect is desired and whenever the absence of wholly reliable laboratory facilities for determination of values for prothrombin in the blood make the use of dicumarol inadvisable.

The administration of dicumarol is advantageous in that the drug is effective when administered orally and in that it is cheap (a few cents a day). It is disadvantageous in that its effect on prothrombin in the blood is delayed (twenty-four hours or longer), that its effect continues after discontinuation of administration (two days or longer) and that entirely reliable laboratory facilities are necessary for safe and efficient administration.

The danger of hemorrhage attends the use of both heparin and dicumarol, but this danger is minimal when they are used judiciously and expertly. If bleeding occurs during the use of dicumarol or if excessive deficiency of prothrombin results, the intravenous injection of vitamin K will restore the prothrombin in the blood to normal or nearly normal values. The transfusion of fresh blood is advisable if bleeding is excessive. My associates Drs. T. W. Parkin and W. F. Kvale have demonstrated the effectiveness of protamine in neutralization of the effect of heparin. Fifty mg. of protamine injected intravenously will neutralize the effect on the blood of 50 mg. of heparin. The methods of use of heparin and dicumarol are presented in table 1. The danger of hemorrhage, the conditions in which anticoagulant agents are to be used cautiously or avoided and the method of calculation of the percentage of prothrombin from prothrombin "time" have been discussed in detail in other presentations.[3]

TABLE 1.—*Methods of Use of Anticoagulant Agents in Acute Vascular Occlusion*

I.	Emergency or use in absence of laboratory facilities for determination of prothrombin in the blood
	a. 50 mg. of undiluted heparin, injected intravenously every four hours
II.	Absence of emergency: adequate laboratory facilities available
	a. 300 mg. of dicumarol on first day
	b. 200 mg.* on each subsequent day that value for prothrombin in the blood is greater than 20 per cent
III.	Emergency and continued use of anticoagulant agents
	a. 50 mg. of heparin every four hours and dicumarol as indicated in II, above
	b. Heparin discontinued when the value for prothrombin is 30 per cent or less
	c. Blood for determination of prothrombin should be obtained not less than three hours after last injection of heparin, since presence of heparin in the blood gives a value for prothrombin which is falsely small

* In instances in which the drug produces excessive effects on the concentration of prothrombin in the blood, 100 mg. may be used instead of 200 mg. Infrequently, more than 200 mg. may be needed. The aim of treatment is to maintain the values for prothrombin between 10 and 30 per cent.

VENOUS THROMBOSIS

The chief danger of venous thrombosis in the extremities is pulmonary embolism. Venous thrombosis, however, may produce venous obstruction and,

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Read in the General Scientific Meetings at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1947.

1. Nichol, E. S., and Page, S. W., Jr.: Dicumarol Therapy in Acute Coronary Thrombosis: Results in 50 Attacks, with Review of Data on Embolic Complications and Immediate Mortality in Myocardial Infarction, J. Florida M. A. **32**: 365-370 (Jan.) 1946. Peters, H. R.; Guyther, J. R., and Brambel, C. E.: Dicumarol in Acute Coronary Thrombosis, J. A. M. A. **130**: 398-403 (Feb. 16) 1946. Wright, I. S.: Experiences with Dicumarol (3,3' Methylene-Bis [4-Hydroxycoumarin]) in the Treatment of Coronary Thrombosis with Myocardial Infarction: Preliminary Report, Am. Heart J. **32**: 20-31 (July) 1946. Parker, R. L., and Barker, N. W.: The Use of Anticoagulants in the Management of Acute Myocardial Infarction: Preliminary Report, Proc. Staff Meet., Mayo Clin. **22**: 185-192 (May 14) 1947. Glueck, Helen I.; Strauss, Victor, and McGuire, Johnson: Combined Heparin-Dicumarol Therapy of Myocardial Infarction, read before the Annual Scientific Section of the American Heart Association, Atlantic City, N. J., June 6-7, 1947.

2. Loewe, Leo, and Hirsch, Edward: Heparin in the Treatment of Thromboembolic Disease, J. A. M. A. **133**: 1263-1268 (April 26) 1947.

3. Allen, E. V.: The Clinical Use of Anticoagulants: Report of Treatment with Dicumarol in 1,686 Postoperative Cases, J. A. M. A. **134**: 323-329 (May 24) 1947. Allen, Hines, Kvale and Barker.[4]

at a remote time, the manifestations of chronic venous insufficiency of the lower extremities, easily recognized as edema, varices, stasis dermatitis and cellulitis, and stasis ulceration of the skin. When the physician sees a patient who has venous thrombosis in the legs, his chief concern is prevention of fatal pulmonary embolism. Anticoagulant agents are effective in this regard in most instances (table 2). The secondary concern is halting the process of venous thrombosis. Anticoagulant agents likewise are effective in this regard (table 2). The anticoagulants may be used in the postpartum state without unusual danger from uterine bleeding.[4]

In addition to the use of anticoagulants, I recommend elevation of the involved extremity and the application of a moist warm pack.

It may be advisable to use the program outlined in the third section of table 1 in all cases of venous thrombosis. Actually, clinical experience has indicated that dicumarol alone is effective in most cases. If the venous thrombosis is extensive or if it is progressing, both heparin and dicumarol should be used. Dicumarol should be used until there has been no evidence of new venous thrombosis for seven to ten days. The patient may be active when dicumarol has produced satisfactory reduction of prothrombin in the blood. If there

TABLE 2.—*Results of Anticoagulant Therapy in 352 Cases of Postoperative Venous Thrombosis*

Condition to Be Prevented	Cases: Expected if Anticoagulants Had Not Been Used	Cases: Actual Number
Subsequent venous thrombosis or pulmonary embolism	88	9*
Subsequent fatal pulmonary embolism	20	0

*One case of minor pulmonary infarction and 7 cases of venous thrombosis; in 3 cases the percentage of prothrombin in the blood was more than 30. In 1 case treatment with dicumarol had been discontinued and prothrombin was normal.

is edema at this time, an adequate support must be worn until it can be discarded without permitting edema.

It is my belief that the use of anticoagulant agents is, in general, superior to ligation of veins as a therapeutic procedure in acute venous thrombosis, although in many instances [5] there is no doubt of the effectiveness of ligation of veins. It appears to me that, with three exceptions, the record for the use of anticoagulant agents is better than that of ligation of veins. Ligation of veins is superior in the prevention of pulmonary embolism arising from thrombi in the veins of the legs which recur repeatedly at long intervals, because it is difficult to use anticoagulant agents for long periods. Ligation of veins is the treatment of choice when anticoagulants are contraindicated and when they are ineffective, as is very rarely the case.

We have had some experience with injection of a local anesthetic agent into the paravertebral sympathetic ganglions when acute venous thrombosis occurs. This procedure does not prevent pulmonary embolism or halt venous thrombosis. I know of no acceptable evidence that it lessens the remote effects of venous thrombosis; that is, chronic venous insufficiency, which produces varices, dermatitis and ulceration. It lacks effectiveness, therefore, in prevention of the three major complications of venous thrombosis. I do not deny that this method may lessen the pain of venous thrombosis,

TABLE 3.—*Treatment of Acute Peripheral Arterial Occlusion (Embolism and Thrombosis)*

I. Early diagnosis and treatment
II. Relieve pain
  a. Opiates as needed
III. Avoid measures which do harm, such as
  a. Application of heat
  b. Elevation of the extremity
IV. Administer anticoagulant agents
  a. Heparin and dicumarol
V. Relieve arterial spasm
  a. Heat
    1. Warm environment; room temperature about 90 F.
    2. Apply warm packs to other than involved extremities
  b. Alcohol by mouth (liberally !); Papaverine (see table 4)
  c. Anesthetization of appropriate sympathetic nerves
    1. Spinal or caudal anesthesia
    2. Paravertebral anesthetization of sympathetic nerves
  d. Oscillating bed if available
VI. Embolectomy, provided medical treatment is not effective in greatly improving the circulation within 6-12 hours and provided hopelessness of saving the limb is not already apparent

but such pain usually is minimal and unimportant, responding satisfactorily to the oral administration of anodynes. Anesthetization may lessen fever, but fever is transient, is minimal to moderate and is not important. The procedure may hasten the disappearance of edema, but this ordinarily is accomplished by simple elevation of the limb. Anesthetization of appropriate paravertebral ganglions may lessen the arterial spasm occasionally associated with venous thrombosis, but the local application of a warm pack may be as effective. Hence, the injection of anesthetic agents certainly has limited usefulness, and my experience, as well as that of some of my experienced surgical colleagues, has led

TABLE 4.—*Treatment of Pulmonary Embolism*

I. Emergency treatment
  a. 1/60 grain atropine sulfate and ½ grain of papaverine hydrochloride intravenously
  b. Oxygen by inhalation
  c. 50 mg. of heparin intravenously and 300 mg. of dicumarol orally
  d. Avoid use of morphine, epinephrine and digitalis
II. Continued treatment
  a. Repeat injections of atropine and papaverine every 4 to 6 hours as needed
  b. Oxygen as needed
  c. Heparin and dicumarol
III. Absence of emergency
  a. Heparin and dicumarol

to sharp restriction of the use of anesthetization of paravertebral ganglions in the treatment of acute venous thrombosis.

SUDDEN ARTERIAL OCCLUSION IN THE EXTREMITIES

It is well to bear in mind the fact that arterial embolism ordinarily produces much more profound effect on the arterial circulation than does simple interruption in

4. Allen, E. V.; Hines, E. A., Jr.; Kvale, W. F., and Barker, N. W.: The Use of Dicumarol as an Anticoagulant: Experience in 2,307 Cases, Ann. Int. Med., to be published.
5. Allen, A. W.; Linton, R. R., and Donaldson, G. A.: Venous Thrombosis and Pulmonary Embolism, J. A. M. A. **133**: 1268-1274 (April 26) 1947.

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the continuity of a major artery.[6] The ischemia which results is caused in a large part by the spasm of collateral arteries induced by the presence of an embolus. If such ischemia persists for more than a few hours, the intima of blood vessels distally is injured to such a degree that intravascular thrombosis occurs when blood again runs into them. The ischemia which originally was caused by mechanical obstruction of an artery by an embolus and by arterial spasm eventually is the result of arterial thrombosis if treatment is delayed or inadequate. These events appear less striking in acute arterial thrombosis but are nonetheless important. The treatment of acute peripheral arterial embolism is outlined in table 3. Better understanding of the abnormal physiology involved in arterial embolism and the use of methods to correct it have resulted in far better results than were obtained a few years ago. At the Mayo Clinic we have treated 19 patients who had acute arterial embolism with most of the methods outlined in table 3, excepting spinal and caudal anesthesia and embolectomy. Some of the cases concerned have been reported previously.[7] Treatment was begun early in 11 instances; there was recovery of the circulation to the limb in 10 instances. In 8 instances treatment was begun more than twenty-four hours after embolism had been sustained. Recovery of circulation occurred in only 2 cases. In 16 instances treatment was initiated within twenty-four hours of the onset of acute arterial thrombosis; recovery occurred in 13 instances. In 10 instances treatment was begun twenty-four hours or more after the onset of acute arterial thrombosis; recovery of the limb concerned occurred in 5 instances.

TABLE 5.—*Results: 329 Cases of Pulmonary Embolism in Which Anticoagulant Therapy Was Used*

Condition to Be Prevented	Cases	
	Expected if Anticoagulants Had Not Been Used	Actual Number
Subsequent venous thrombosis or pulmonary embolism	144	3
Subsequent fatal pulmonary embolism	60	1*

* Occurred after prothrombin time had returned to normal.

These figures emphasize adequately that the early institution of measures to diminish the coagulability of the blood and to relieve arterial spasm, along with avoidance of harmful measures, has greatly brightened the outlook for recovery of limbs affected with acute arterial occlusion. The figures emphasize also the predominant role of medical treatment and the greatly reduced need for surgical treatment of acute arterial embolism.

PULMONARY EMBOLISM

Knowledge of the mechanisms which are initiated by pulmonary embolism has progressed rapidly in recent years. Death from pulmonary embolism is not solely the result of mechanical plugging of a pulmonary artery. When an embolus lodges in a pulmonary artery, arterial spasm, bronchospasm, atelectasis, deposition of a thrombus on the embolus and coronary insufficiency occur. These are the agents of death in pulmonary embolism. We are much indebted to de Takats and Katz and their respective associates for these observations.[8]

The treatment of pulmonary embolism is outlined in table 4. Every hospital should be prepared for the emergency treatment of pulmonary embolism. Although no final conclusion has been reached concerning the effectiveness of emergency treatment, it is probable that it can save many lives.

When a patient has recovered from pulmonary embolism, the major problem is the prevention of a second episode, which in many instances will be fatal. Experience has indicated clearly that pulmonary embolism from which a patient has recovered frequently is only the pilot event of a more catastrophic—indeed, a lethal —process of embolism.

The experience at the Mayo Clinic indicates clearly the effectiveness of the anticoagulant agents in the prevention of additional pulmonary embolism, once pulmonary embolism has occurred.[9] The most recent evaluation of the use of such agents postoperatively is presented in table 5. The remarks made previously concerning the comparative usefulness of ligation of veins are pertinent in this consideration.

SUMMARY

In recent years the management of patients who have acute vascular occlusion has become eminently more satisfactory. Understanding of the mechanisms involved, achieved by experimental and clinical observation and early and adequate treatment, has greatly improved the outlook for patients who have acute intravascular thrombosis. Many lives and limbs can be saved and many patients can be spared the distressing experience of pulmonary embolism and chronic venous insufficiency, which is the remote result of extensive venous thrombosis, if treatment based on wisdom and understanding is instituted early.

6. McKechnie, R. E., and Allen, E. V.: Effect on the Circulation of Mechanical Occlusion of Individual Arteries of the Extremities: Relation to Arterial Embolism, Am. Heart J. **14:** 127-134 (Aug.) 1937.

7. Barker, N. W.; Hines, E. A., Jr., and Kvale, W. F.: Treatment of Acute Arterial Occlusion of Extremities, with Special Reference to Anticoagulant Therapy, Minnesota Med. **29:** 250-252 (March) 1946.

8. Jesser, J. H., and de Takats, G.: Visualization of Pulmonary Artery During Its Embolic Obstruction, Arch. Surg. **42:** 1034-1041 (June) 1941; The Bronchial Factor in Pulmonary Embolism, Surgery **12:** 541-552 (Oct.) 1942. de Takats, G., and Fowler, E. F.: Problem of Thromboembolism, ibid. **17:** 153-177 (Feb.) 1945. de Takats, G.; Fenn, G. K., and Jenkinson, E. L.: Reflex Pulmonary Atelectasis, J. A. M. A. **120:** 686-690 (Oct. 31) 1942. de Takats, G., and Jesser, J. H.: Pulmonary Embolism: Suggestions for Its Diagnosis, Prevention and Management, ibid. **114:** 1415-1421 (April 13) 1940. Malinow, M. R.; Katz, L. N., and Kondo, B.: Is There a Vagal Pulmonocoronary Reflex in Pulmonary Embolism? Am. Heart J. **31:** 702-710 (June) 1946. Megibow, R. S.; Katz, L. N., and Feinstein, M.: Kinetics of Respiration in Experimental Pulmonary Embolism, Arch. Int. Med. **71:** 536-546 (April) 1943.

9. Barker, N. W.: Anticoagulant Therapy in Postoperative Thrombophlebitis and Pulmonary Embolism, Minnesota Med. **29:** 778-782 (Aug.) 1946. Allen.[3] Allen, Hines, Kvale and Barker.[4]

Virchow and a New Epoch.—In 1858 a young man of 37 gave a series of lectures in Berlin to a group of medical men. These lectures, later published under the title Die Cellularpathologie, ushered in a new epoch. The young man was Rudolf Virchow. He has been acclaimed, perhaps a little extravagantly, as the greatest figure in medicine since Hippocrates. By applying the cell theory of Schleiden and Schwann to pathology he transferred medicine from its ancient foundation on the four humors of the Greeks to a new foundation, the fundamental unit of modern biology, the cell, and transformed pathology itself into a modern science. At the same time, in the same book, he established the dictum *omnis cellula e cellula*, which has proved to be one of the most important axioms of biology. In these lectures we find epitomized the interaction between medicine and biology, which has repeatedly contributed to the advancement of both.—Wilson, J. Walter: Virchow's Contribution to the Cell Theory, *Journal of the History of Medicine and Allied Sciences*, Spring 1947.

SUPPORT OF THE PARALYZED FACE BY FASCIA

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In paralysis of the facial nerve, the temporal muscle and its fascia can be used for supporting the drooped tissues of the face. For this the muscle is connected to the face by loops of fascia lata, and it can then straighten the deviated mouth and columella nasi and support them in the normal position. The nasolabial fold is often reformed, and a small amount of movement may be produced by the muscle which is controlled by the fifth cranial nerve. Patients are grateful also for the improved control of the mouth, which permits them to smoke, whistle and eat and drink in public.

The procedure does not disturb the patient much, does not impair the functions of other nerves or leave visible facial scars. Five or six days' hospitalization is recommended, with an additional week of outpatient care. Worth while improvement is usually noted at once.

Fig. 1.—*A*, total paralysis resulting from removal of malignant parotid tumor (elsewhere). All of the branches were individually severed in the parotid area. *B*, after one operation the patient appears quite normal in repose and with small smile. She attends a university and does well.

INDICATIONS FOR OPERATIVE REPAIR

The operative intervention is indicated when the paralysis of the facial nerve seems to be permanent and when direct suturing, nerve grafts or anastomoses are not feasible—or when these have been tried and have not produced the desired result. It may also be used primarily in conjunction with any of the nerve operations.

THE OPERATIVE PROCEDURE

Endotracheal anesthesia of the patient is employed with the tube coming out the opposite corner of the mouth. Strips of fascia lata 4 to 8 mm. wide are obtained in the longest lengths possible from the iliotibial band, by use of the Masson or other stripper. The temporal incision is made in the hair-bearing area and is carried down to the temporalis fascia. A small stab opening is made in the middle of the upper lip and another one in the lower lip 1 to 2 cm. outside the angle of the mouth and 1 cm. below the vermilion.

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The first strip is then passed subcutaneously from the temporal wound down through the face, out of the stab opening in the upper lip and back up to the temple by a different route, so that it forms a loop and encircles a good deal of soft tissue in the lip. Another strip is passed similarly down to the stab opening in the lower lip and back, care being taken again to avoid

Fig. 2.—*A*, paralysis which resulted from the removal of an intracranial tumor and was repaired by anastomosis of the eleventh nerve (elsewhere). In this instance the patient recovered only mass movements, the muscles working on an "all or none" basis and not very helpful in expression. *B*, after fascial transplant the patient has learned not to use the anastomosis and has even requested that it be disconnected.

puncturing the buccal mucosa. The fascia may be carried through the face by a Blair fascia needle or by an ordinary long sack-sewing needle.

After being placed, the loops are worked back and forth a little to take out any slack and the temporalis fascia is opened about 1 inch (2.5 cm.) above the coronoid to expose the muscle fibers. A heavy full curved fascia needle is used, and one end of each strip is passed around a substantial segment of muscle and tied to the other end by a surgeon's knot. The knots

Fig. 3.—Result (*A*) following tree nerve graft (elsewhere) for paralysis; *B*, after fascial transplant. Figures 2 and 3 are shown not as an argument against the nerve operations but to note that something further can be done when they do not work as well as expected.

are pulled taut with the mouth in considerable overcorrection and then fixed by taking several interrupted silk stitches through the knots and by sewing the ends of the strips down. A pressure dressing is applied to cover the eye, ear and entire side of the face; this helps materially in getting smooth early healing.

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POSTOPERATIVE CARE

The pressure dressing is left on four or five days (if the eye is comfortable) and then replaced by a smaller one. Chewing is limited for the first week but is gradually resumed as any tenderness in the temple subsides. The overcorrection disappears within about ten days, and after two or three weeks the patient may practice biting down in front of a mirror until he can produce some lateral movement of the mouth. He notes how this is done and then strives to increase the extent of the movement. A little later he may try to balance the movement with a small smile on the normal side; meanwhile he should practice repressing the movements on the normal side. This latter point is emphasized, as almost any patient with a facial paralysis will try so hard to move the paralyzed side that

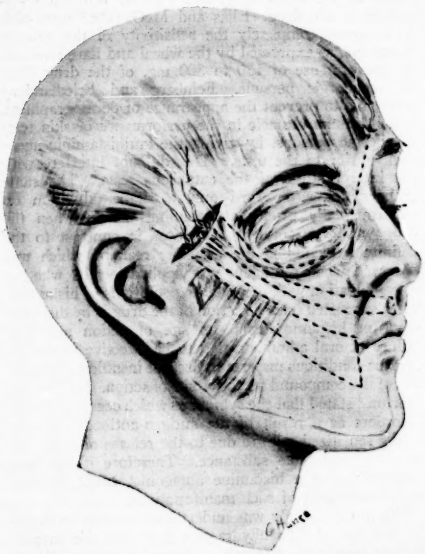

Fig. 4.—Diagram showing the location of the two main fascial loops in the face. An additional strip is sometimes placed in the lower eyelid and anchored to the temporal fascia on the same side and to the frontalis muscle on the opposite side when it is impossible to correct the lagophthalmos by a canthoplasty or other local operation on the eyelid.

he will form the habit of exaggerating the movements of the normal side. He must learn that balance in the face is more important than the actual range of motion and must always strive for this balance. As a starting point, he may consciously try to remain a little glum and then work from this point forward as he learns better control of his expressions. Sudden large laughs can never be adequately balanced in these patients and may reveal a paralysis which is otherwise fairly well controlled.

VARIATIONS IN THE OPERATION

Preserved fascia, Kangaroo tendon and wire have been used, but it is thought that autogenous fascia is superior to any foreign material, and it is easy to obtain.

Additional loops may be put in to the prominence of the cheek, around the mouth or to the angle, but the two simple slings which have been described usually suffice.

The anchorage above may be to the temporal fascia or to the zygomatic arch rather than to the muscle, but this does not permit any movement of the face or even enough to take any slack out of the loops if they stretch or slip a little.

Fig. 5.—*A*, congenital paralysis of twenty years' duration. *B*, the result of a single operation (fascial transplant). The patient has a good personality and nice features and has since married. (The difference in the palpebral features is made more noticeable by the squinting of the normal lids because of the strong lights used to take this photograph.)

Older persons with paralysis of long duration may have considerable excess skin. This may be excised by a unilateral face-lifting operation as a separate procedure. It is a little safer to do it before the fascial transplant, but the amount to be excised can be estimated better afterward. Younger patients, or those with paralysis of lesser duration, will usually tighten up the stretched skin spontaneously during the first few postoperative months.

THE EYELIDS AND FOREHEAD

The paralyzed upper lid seldom requires any treatment (unless combined with paralysis of the third nerve) but the sagging lower lid may create a larger palpebral fissure, apparent or actual exophthalmos and a staring expression. The general elevation of the

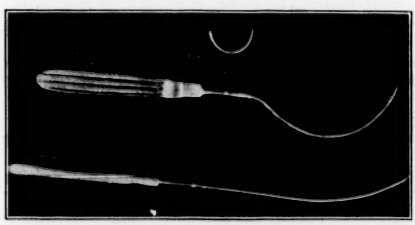

Fig. 6.—Three needles ordinarily used for placing the fascial strips, from above downward: Gallie needle used for anchoring the strips in the temporal muscle; semicircular needle used for placing strip in lower lid, and needle used for placing the main strips in the face. The two lower needles were devised by Dr. Douglas Sanders and are made of bent heavy Kirschner wires with a slot cut in the tip and a handle mounted on the end.

face usually helps this, and nothing else is required in some cases. If this is not sufficient, a small external canthoplasty may be performed, excising a full thickness wedge of the lower lid near the outer canthus. Occasionally it is worth while to put a thin fascial strip horizontally through the lower lid near the tarsal

border, anchoring it externally to the temporal fascia above and medially to the opposite frontalis muscle or fascia. These operative corrections do much to prevent irritation to the globe, but it is always advisable for the patients to avoid excessive exposure to strong, cold winds or to dust.

No known operative procedure will restore movement to the forehead. However, if the brow is heavy and low it may be elevated by excising an ellipse of skin in the hair line just above, undermining and sliding that side of the forehead up. A separate strip of fascia may be put in from high in the temporal region, through the brow and then carried high up on the opposite side and anchored.

The amount of movement obtained varies from little to a noticeable amount, the majority of persons obtaining a small range of definitive motion which is of value in expression. The cause of this variation is not entirely understood, though some persons seem to have much thicker and more active muscles than others. An occasional patient will have the fascial loops "freeze" to all the surrounding tissues throughout their length; this almost precludes movement but leaves the face balanced in repose, which is still worth while. The patient's own efforts and general morale have considerable influence on the final result in many cases.

The point of initial overcorrection should be mentioned again. We have never had to loosen any of these loops secondarily (even when the mouth was pulled far over to the paralyzed side), though we have had to tighten them in a few instances and to insert additional loops later in a few others. The single operation suffices in nearly all patients, and it is not entirely clear why an occasional loop will need secondary tightening. It may be due to (*a*) stretching of the fascia (or not using wide enough strips); (*b*) the loops cutting through some soft tissue above or below (the reason for encompassing as much soft tissue at either end as possible), or (*c*) persistent overactivity on the normal side.

The most dramatic results are obtained in total paralysis, but worth while results have been obtained in partial paralysis (where nerve operations were contraindicated). In the latter, however, the closer the expression is to normal, the less is to be expected from any operative procedure—since the net gain will be less.

The chief disadvantages of the operation are (*a*) the occasional necessity of secondary adjustments outlined previously and (*b*) the fact that, in common with all other operative measures it does not restore completely normal movements to the permanently paralyzed face.

Among the advantages of the operation may be listed (*a*) its simplicity and directness; (*b*) its early, definite results; (*c*) the absence of resultant annoying tics or mass actions and the minimal possibility of complete failure; (*d*) it can be used later when nerve operations have not been as successful as anticipated or desired; (*e*) it can be used in conjunction with operations on the nerves; (*f*) it can be used in practically all patients, regardless of the cause or duration of the paralysis, and (*g*) it does not produce any additional disability or visible scars.

SUMMARY

Additional observations have been made on the use of the temporal muscle and strips of fascia lata in the treatment of facial paralysis.

DIPHENHYDRAMINE HYDROCHLORIDE ("BENADRYL HYDROCHLORIDE")

Report on Its Use in One Hundred and Thirty-Seven Patients

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Recent investigation has shown diphenhydramine hydrochloride (dimethylaminoethyl benzohydryl ether hydrochloride, "benadryl hydrochloride" N. N. R.) to be an efficient histamine antagonist and an antispasmodic of low toxicity. Loew [1] and his associates demonstrated that fatal bronchoconstriction and symptoms of anaphylactic shock following the inhalation of histamine could be prevented in guinea pigs by prior administration of the drug. Elias and McGavack [2] were able to suppress completely the sensitivity of the skin to histamine, as expressed by the wheal and flare reaction, by the oral use of 150 to 300 mg. of the drug daily in nonallergic persons. Feinberg and Friedlander [3] were able to prevent the appearance of dermographism, which was an obstacle in the performance of skin tests in allergic persons, by giving the antihistaminic agent orally prior to the tests. This did not interfere with the interpretation of the cutaneous tests. The same authors [4] later observed only a slight inhibition on experimentally produced histamine wheals when the drug was given orally. This was in contrast to the definite reduction in the whealing reaction which was observed when the agent was applied locally, whether in combination with or preceding solutions of histamine. They suggested that the action of the drug is by displacement of histamine from its site of action and that failure of oral administration to be effective in certain allergic conditions may result because insufficient quantities of the compound reach the site of action. McElin and Horton [5] stated that the symptoms which occur in allergic disorders as a result of the antigen-antibody reaction in the sensitized cell are due to the release of histamine or a histamine-like substance. Therefore it has been suggested that a histamine antagonist could be used in the treatment of such manifestations.

The present study was undertaken in order to evaluate the use of diphenhydramine hydrochloride in conditions which are generally accepted as being allergic as well as in other states which present similar symptoms but which are not necessarily allergic. A preliminary report has been made on the use of this drug in 41 of the cases herein cited.[6] Since that time 99

Clinical Instructor in Medicine, George Washington University School of Medicine (Dr. Blumenthal), and Chief Medical Resident, George Washington University Hospital (Dr. Rosenberg).

1. Loew, E. R.; Kaiser, M. E., and Moore, V.: Synthetic Benzhydryl Alkaline Ethers Effective in Preventing Fatal Experimental Asthma in Guinea Pigs Subjected to Vaporized Histamine, J. Pharmacol. & Exper. Therap. **83:** 120, 1945. Loew, E. R., and Kaiser, M. E.: Alleviation of Anaphylactic Shock in Guinea Pigs with Synthetic Benzhydryl Alkamine Ethers, Proc. Soc. Exper. Biol. & Med. **58:** 235, 1945.

2. Elias, H., and McGavack, T. H.: Influence of Dimethylaminoethylbenzhydryl Ether Hydrochloride upon Histamine Flare Reaction, Proc. Soc. Exper. Biol. & Med. **61:** 133, 1946.

3. Feinberg, S. M., and Friedlander, S.: Relief of Dermographism and Other Urticarias of Histamine Origin by a Synthetic Benzhydryl Alkamine Ether, J. Allergy **16:** 296, 1945.

4. Friedlander, S., and Feinberg, S. M.: The Effect of Oral and Local Use of Benadryl (Dimethylaminoethylbenzhydryl Ether Hydrochloride) on the Whealing Due to Histamine, Antigen-Antibody Reactions, and Other Whealing Mechanisms: Therapeutic Results in Allergic Manifestations, J. Allergy **17:** 129, 1946.

5. McElin, T. W., and Horton, B. T.: Clinical Observations on the Use of Benadryl: A New Antihistamine Substance, Proc. Staff Meet., Mayo Clin. **20:** 417, 1945.

6. Blumenthal, L. S., and Rosenberg, M. H.: Benadryl: A Preliminary Report on Its Use in Thirty-Nine Patients, M. Ann. District of Columbia **15:** 478, 1946.

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additional cases have been studied, and the total number is represented in this report. Table 1 gives data on 137 patients, comprising 140 cases, treated with the antihistaminic agent; it records the results obtained in each instance.

TABLE 1.—*Clinical Use of Diphenhydramine Hydrochloride ("Benadryl Hydrochloride")*

Diagnosis	No. of Patients	Change in Clinical Condition: Pronounced Relief	Moderate Relief	Slight or No Relief
Urticaria	29	24	1	4
Penicillin reaction	1	1	..	..
Morphine reaction	1	1	..	..
Hay fever	23	15	5	3
Bronchial asthma	12	1	3	8
Contact dermatitis	16	12	4	..
Functional dysmenorrhea	10	5	2	3
Migraine	11	4	2	5
Vasomotor rhinitis	3	1	1	1
Spastic colon	2	2	..	..
Cardiac asthma	2	2	..	..
Pruritus associated with sunburn	3	3	..	..
Generalized pruritus without rash	2	2	..	..
Jaundice	2	..	2	..
Psoriasis	1	..	1	..
Neurodermatitis	3	2	..	1
Atopic eczema	2	1	1	..
Rash of infectious mononucleosis	1	1	..	..
Dermatitis herpetiformis	1	..	..	1
Pityriasis rosea	1	..	..	1
Senile pruritus	1	..	..	1
Angioneurotic edema	1	..	1	..
Ménière's syndrome	1	..	1	..
Tabetic crises	1	..	..	1
Prevention of transfusion reaction	10	1	1 (?)	2
	140	84	25	31

RESULTS OF TREATMENT

Urticaria.—Twenty-nine patients with urticaria were treated. Of these, 24 received pronounced relief, 1 obtained moderate relief and 4 were not relieved. Table 2 lists the etiologic agents in cases in which these were known. Thirteen cases were due to sensitivity to drugs, 7 to foods, 1 to wool and 8 to unknown causes. The drugs responsible for sensitivity reactions were penicillin, phenobarbital, sulfathiazole, tetanus antitoxin, potassium thiocyanate, insulin, acetylsalicylic acid and theelin. Allergies to these agents are well known, and the use of "benadryl hydrochloride" in the treatment of such allergies has been previously reported.[7] The foods which produced urticaria in these patients were sea food, tomatoes, fowl and eggs. In addition there were 3 cases of food or drug sensitivity without urticaria which were treated with the compound. One was that of a patient in whom there developed a large wheal at the site of injection of penicillin in oil and beeswax, given ten days previously. This wheal rapidly became larger and was associated with severe localized pruritus. The first dose of diphenhydramine hydrochloride stopped the itching, although the lesion continued to get larger. The patient therefore was maintained on the drug orally for three days, during which time the wheal became progressively smaller and then disappeared. A second patient had a known sensitivity to chocolate, characterized by the appearance of sneezing, burning of the roof of the mouth, coryza and lacrimation after eating chocolate. This patient was relieved of these symptoms by taking diphenhydramine hydrochloride. She also found that if she took a capsule of the drug before eating chocolate the symptoms did not appear. In a third patient severe generalized pruritus without rash developed approximately one hour after each of three injections of morphine. This patient was given a 50 mg. capsule of diphenhydramine hydrochloride after the itching developed, and in twenty minutes he was completely free of symptoms. When he received another capsule prior to the next dose of morphine no reaction occurred. The following day morphine was again administered without a prophylactic dose of the antihistaminic agent, and itching did not occur. Nine of these patients were given intravenous injections of diphenhydramine hydrochloride. The use of the drug intravenously will be discussed later in this article.

Hay Fever.—Twenty-three patients with seasonal hay fever were treated. Of these, 15 received pronounced relief, 5 obtained moderate relief and 3 were not benefited. Many previous reports on the use of "benadryl" in hay fever have been made. Levin[7b] noted that the effect of the drug is generally definite, relief being either decided or not present at all. However, 5 of our patients did receive definite relief which was not complete. The action of the drug may vary at different times. Several patients commented that they were on occasion completely relieved of symptoms and at other times received no relief. It has not been our experience that the patients become tolerant to the drug after taking it for a long period of time or that the drug becomes less efficacious as it is used over that period. One patient who usually discontinues playing golf during the hay fever season was able to play without discomfort by taking a 50 mg. capsule of diphenhydramine hydrochloride prior to playing.

Bronchial Asthma.—Of 12 patients with bronchial asthma treated with diphenhydramine hydrochloride only 1 was decidedly relieved by its use. Three were moderately relieved, and 8 showed no improvement at all. Several authors[8] have reported good results with the use of this drug against bronchial asthma, but most reports indicate that the agent is not particularly effective against this disease. However, we believe that the use of the compound is worth while because an occasional patient is benefited. It was noted that many of the patients who did not respond to the

TABLE 2.—*Etiology of Urticaria in Patients Treated with Diphenhydramine Hydrochloride*

	No. of Patients	Pronounced Relief	Moderate Relief	Slight or No Relief
Drugs				
Penicillin	3	2	..	1
Phenobarbital	2	1	..	1
Sulfathiazole	3	2	..	1
Tetanus antitoxin	1	..	..	1
Potassium thiocyanate	1	1	..	..
Insulin	1	1	..	..
Acetylsalicylic acid	1	1	..	..
Theelin	1	1	..	..
Foods				
Seafood	4	3	1	..
Tomatoes	1	1	..	..
Fowl	1	1	..	..
Eggs	1	1	..	..
Wool	1	1	..	..
Etiology unknown	8	8	..	..
	29	24	1	4

7. (*a*) Logan, G. B.: The Use of Benadryl in Treating Some of the Allergic Diseases of Childhood, Proc. Staff Meet., Mayo Clin. **20:** 436, 1945. (*b*) Levin, S. J.: Betadimethylaminoethyl Benzhydryl Ether Hydrochloride (Benadryl): Its Use in Allergic Diseases, J. Allergy **17:** 145, 1946. (*c*) Gastineau, C. F., and Leavitt, M. D.: Treatment of Allergy to Insulin with Benadryl: Report of One Case, Proc. Staff Meet., Mayo Clin. **21:** 316, 1946. (*d*) McElin and Horton.[5]

8. (*a*) McGavack, T. H.; Elias, H., and Boyd, L. J.: The Influence of Dimethylaminoethyl Benzhydryl Ether Hydrochloride (Benadryl) upon Normal Persons and upon Those Suffering from Disturbances of the Autonomic Nervous System, J. Lab. & Clin. Med. **31:** 560, 1946. (*b*) Schwartz, E., and Levin, L.: Benzhydryl Ether Hydrochloride (Benadryl) in the Symptomatic Treatment of Allergy, New York State J. Med. **40:** 1233, 1946. (*c*) Levin.[7b]

medicament were made extremely drowsy and were able to sleep. Examination of the chest at that time showed no change in the physical observations. It is considered that the drug acted as a sedative in these cases and that no bronchial relaxation occurred.

Contact Dermatitis.—Sixteen patients with contact dermatitis were treated. Twelve of these received pronounced relief and 4 were moderately improved. The reported effects of the use of diphenhydramine hydrochloride in contact dermatitis vary greatly. Most of the series reported have been small in number. Some investigators have considered [9] that the drug has no place in the treatment of this condition. Others [7b] have reported good results in the relief of the associated pruritus. From the results that we have obtained, we believe that there is a definite indication for the use of the drug in treatment of contact dermatitis.

Functional Dysmenorrhea.—Ten patients with functional dysmenorrhea were treated. Five received decided relief, 2 obtained moderate relief and 3 were not relieved. According to Selle [10] histamine, even in extremely high dilutions, is a powerful stimulant of the uterine musculature. We contemplate undertaking studies to determine whether or not there is an increase in the level of histamine in the blood at the time of menstruation. If this is true, the use of an antihistaminic agent against dysmenorrhea will rest on a sound physiologic basis. The antispasmodic action of the drug and the psychic factor of any type of therapy in dysmenorrhea also must be evaluated in determining the efficacy of the therapeutic agent. Other reports [11] vary as to the efficacy of diphenhydramine hydrochloride in this condition. There has been no report to our knowledge of results with this drug in a large series of such cases, and until such a report is available no real decision can be reached.

Migraine.—Eleven patients with typical migraine headaches were treated. In 4 the relief was pronounced, in 2 moderate; 5 received no relief. All these patients had previously [12] been relieved by the use of dihydroergotamine.[13] All were told to take 100 mg. of diphenhydramine hydrochloride orally at the first symptom of their migraine attack. In 2 instances this dosage had to be repeated in four hours because the headache returned. McElin and Horton [5] report the use of the drug in 3 cases of migraine without relief. Levin [7b] reported relief in 11 of 18 patients with migraine. He stated that the effect of the drug varied in most of the patients who were relieved and that in several no relief resulted from a dosage which was the same or larger than one which had previously been effective.

Vasomotor Rhinitis.—Three patients with vasomotor rhinitis were treated. One, the patient whose sensitivity to chocolate has been discussed previously, experienced pronounced relief; 1 obtained moderate benefit and 1, no relief.

Spastic Colon.—Diphenhydramine hydrochloride was used in 2 cases of spastic colon with definite relief of symptoms. McGavack, Elias and Boyd [8a] used this agent on 7 patients with spastic colon with excellent relief of symptoms in 3 and improvement in 4.

The same authors [8a] have shown that the compound has a pronounced depressant effect on the presence of both free and total gastric acid in patients who showed free acid prior to the administration of the drug. Moreover, there was little or no response to injections of histamine after the patients had taken the antihistaminic agent orally within one hour before the test. Theoretically the threefold action of the drug, (1) antihistaminic, (2) antispasmodic and (3) sedative, would suggest its use in peptic ulcers and other conditions associated with hyperacidity. Thus far no extensive study of the use of diphenhydramine hydrochloride in peptic ulcers has been reported.

Cardiac Asthma.—Two patients who had persistent cough and mild asthmatic wheezes, which persisted after their congestive cardiac failure was controlled, were given the antihistaminic agent with disappearance of these symptoms. Relief of symptoms in these cases suggests that the compound acted to relieve the bronchospasm that may have accompanied the cardiac failure.

Miscellaneous.—A group of patients with miscellaneous conditions, in all of which there was pruritus, were treated. Three patients with sunburn were definitely relieved of pruritus. Two patients with generalized pruritus without rash were also relieved. Two patients with jaundice and 1 with psoriasis obtained moderate relief. In these it was difficult to determine what role sedation played in the production of relief, because all 3 became extremely sleepy after the administration of one 50 mg. capsule of the drug. Three patients with neurodermatitis were treated, with pronounced relief in 2 and no relief in 1. Treatment of 2 patients with atopic eczema resulted in well defined relief for 1 and moderate relief for the other. One patient with a pruritic rash associated with infectious mononucleosis was decidedly relieved. This case has been previously reported in greater detail.[6] Three patients who had, respectively, dermatitis herpetiformis, pityriasis rosea and senile pruritus were treated without relief. One patient with angioneurotic edema and 1 with Ménière's syndrome were treated with moderate relief. A patient with severe tabetic pains that occurred during the febrile phase of malarial therapy was not relieved by diphenhydramine hydrochloride. Nor was it possible to prevent the pains when the drug was given prophylactically.

Prevention of Transfusion Reaction.—The following case, which has been previously reported,[6] is included here in detail for the purpose of completeness.

CASE 1.—E. W., a white man aged 67, was hospitalized in May 1945 for treatment of a bleeding peptic ulcer. During hospitalization he was given five transfusions of compatible whole blood. After each transfusion he had a severe chill, an elevation in temperature to 103 F. and generalized urticaria. In April 1946 operative intervention was performed because of a perforated appendix. During the early part of the patient's stormy course he was transfused twice with compatible whole blood. Each transfusion was followed by a severe chill, temperature of 103 F. and urticaria. When it again became necessary to give a transfusion, the patient was given 50 mg. of diphenhydramine hydrochloride orally twenty minutes before the transfusion was started. The patient had no reaction following the transfusion. Several days later this procedure was repeated with a similar result.

We have since attempted prophylactic treatment with this drug in other patients who have had blood transfusion reactions but required further transfusions. We

9. Epstein, S.: Treatment of Allergic Conditions with Pyribenzamine and Benadryl, Wisconsin M. J. **45**: 489, 1946. Schwartz and Levin.[8b]
10. Selle, W. H.: Histamine: Its Physiological, Pharmacological and Clinical Significance, Texas Rep. Biol. & Med. **4**: 138, 1946.
11. McElin and Horton.[5] McGavack, Elias and Boyd.[8a]
12. Horton, B. T.; Peters, G. A., and Blumenthal, L. S.: A New Product in the Treatment of Migraine: A Preliminary Report, Proc. Staff Meet., Mayo Clin. **20**: 241, 1945. Blumenthal, L. S.: Migraine Headache: Treatment of Fifty-One Patients with Dihydroergotamine, M. Ann. District of Columbia, **16**: 10 (Jan.) 1947.
13. Supplied by Sandoz Chemical Works, New York.

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have treated 4 such patients, in whom the transfusion of whole blood had been followed by reactions consisting of fever (over 101 F.) and shaking chills. In each of the patients a second transfusion of compatible whole blood was preceded by the administration of 50 mg. of diphenhydramine hydrochloride orally; there were no reactions to the transfusions. Another patient received protein hydrolysate intravenously on two successive days, each injection being followed by the appearance of generalized urticaria. On the third day, when 50 mg. of diphenhydramine hydrochloride was given orally prior to the infusion of protein hydrolysate, no urticarial reaction followed the transfusion.

Another patient who had received a large number of transfusions was treated.

CASE 2.—L. S., a Negro woman aged 40, was six months pregnant. On admission she had mild diabetes, albuminuria, severe hypoproteinemia and anemia. Her pregnancy was terminated surgically, following which her course was progressively downhill. She died in uremia. Permission for an autopsy was not granted.

Table 3 shows the types of transfusions received by this patient. We have classified the degree of transfusion reaction as follows: Severe: shaking chill, temperature above 101 F., dyspnea, apprehension, nausea, vomiting and tachycardia. Moderate: chilly sensation but no shaking chill, temperature below 101 F. and nausea with or without vomiting during or immediately following the transfusion or within an hour after the transfusion. Slight: slight chilly feeling, no fever, no great interference with the sense of well-being.

From the results obtained we are unable to draw any definite conclusions in regard to the use of diphenhydramine hydrochloride prophylactically in the prevention of transfusion reaction in this patient. It is true

TABLE 3.—*Use of Diphenhydramine Hydrochloride ("Benadryl Hydrochloride") in Prevention of Transfusion Reactions in One Patient*

Case 2	No. of Transfusions	Reaction: Severe	Moderate	Slight	None
Plasma					
With diphenhydramine	16	..	..	1	15
Without diphenhydramine	5	2	..	..	3
Albumin					
With diphenhydramine	9	..	1	..	8
Without diphenhydramine	2	1	..	1	..
Blood					
With diphenhydramine	7	..	1*	..	6
Without diphenhydramine	1	..	..	..	1
Protein hydrolysate					
With diphenhydramine	15	..	1†	3	11
Without diphenhydramine	8	..	..	2	6

* Diphenyhydramine hydrochloride given ninety minutes prior to transfusion.
† Diphenhydramine hydrochloride given three hours prior to transfusion.

that all three of the severe reactions occurred when the drug was not used. In two of the three instances in which a moderate reaction occurred there is a possible explanation because of the interval between the administration of the drug and of the transfusion. Our clinical impression is that the use of the compound prevented this patient from having severe reactions.

In 3 patients an attempt was made to prevent recurrent transfusion reactions by the prophylactic use of intravenous injections of the drug. Table 4 shows the results obtained.

CASE 3.—D. P., a white man aged 37, had a tendency to bleed since birth (following circumcision; frequent nose bleeds; pronounced bleeding after extraction of a tooth and after an appendectomy). A diagnosis of idiopathic thrombocytopenic purpura was made when he was 24 years of age, at which time a splenectomy was performed. Between the ages of 24 and 28 the patient received twenty-eight blood transfusions. With each transfusion he had a severe shaking chill and elevations in temperature to 102 to 106 F. The chills usually lasted

TABLE 4.—*Intravenous Use of Diphenhydramine Hydrochloride in Prevention of Blood Transfusion Reactions*

Case	Type of Transfusion	No. of Transfusions	Reaction: Severe	Moderate	Slight	None
4	Whole blood					
	With diphenhydramine	5	..	..	..	5
	Without diphenhydramine	12	3	..	4	5
5	Whole blood					
	With diphenhydramine	1	1	..	..	..
	Without diphenhydramine	1	1	..	..	..
3	Whole blood					
	With diphenhydramine	5	4	..	..	1
	Without diphenhydramine	1	1	..	..	..
	Blood with plasma removed					
	Without diphenhydramine	5	..	..	..	5

from fifteen minutes to two hours. The reactions were frequently accompanied by backache, urticaria and herpes zoster.

The patient was admitted to this hospital on Oct. 3, 1946 because of bleeding from the gastrointestinal tract. On Oct. 10, 1946 he was given a transfusion of compatible whole blood preceded by 50 mg. of diphenhydramine hydrochloride orally. After receiving 180 cc. of blood the patient had a severe shaking chill; the temperature rose to 101.2 F., the pulse rate was 110, and he was sweating profusely. On Oct. 12, 1946 he was given another transfusion of compatible whole blood without the medicament. After 250 cc. of this transfusion had been given he again experienced a similar severe reaction. That same afternoon he was given the remainder of the blood which had caused a reaction in the morning. This time the transfusion was preceded by the administration of 30 mg. of diphenhydramine hydrochloride intravenously in 100 cc. of isotonic solution of sodium chloride; a reaction did not follow this transfusion.

On Oct. 14, 1946 the patient was given the remainder of the blood to which he had had a reaction on Oct. 10, 1946, and again the transfusion was preceded by the intravenous use of the drug. About thirty-five minutes after the transfusion the patient had a severe reaction characterized by the same manifestations. On Octber 17 and 20 the procedure was repeated, and each time the patient had a severe reaction to the transfusion. Following these experiences the patient was given the red blood cells from 500 cc. of compatible blood, from which the plasma had been removed. Diphenhydramine hydrochloride was not given prophylactically, and a reaction did not occur. This type of transfusion has been repeated on five occasions without subsequent reactions. It is considered that the drug was ineffective in preventing transfusion reactions in this patient.

CASE 4.—H. D., a Negro boy aged 13 whose disease was diagnosed as aplastic anemia, received his first transfusion of whole blood without reaction. His second transfusion was interrupted because of a severe reaction. During the five weeks which preceded the patient's death he was given a total of seventeen blood transfusions. Five of these were preceded by the intravenous administration of diphenhydramine hydrochloride, and twelve were not. We believe that the drug may have aided in preventing reactions in this patient.

CASE 5.—J. S., a Negro man aged 50, had chronic myelogenous leukemia. Following the administration of 150 cc. of a transfusion of compatible whole blood the patient had a severe reaction. On the next day the remainder of the same blood was given, preceded by 30 mg. of diphenhydramine hydro-

chloride given intravenously. After 350 cc. of blood had been given the patient had a similar severe chill. The drug was ineffective in preventing reactions in this patient.

It is extremely difficult to draw any conclusion as to the efficacy of diphenhydramine hydrochloride in preventing blood transfusion reactions in the patients treated because of the multiple factors involved in the production of such reactions. Further study of this problem on a large scale is indicated. It is our clinical impression that several patients may have been prevented from having transfusion reactions by the prophylactic use of the medicament. In several others the drug obviously was ineffective.

To our knowledge there has been only one previous report on the use of the drug prophylactically in the prevention of transfusion or plasma reactions.[7a] If it is possible to show that the agent is efficacious in the prevention of transfusion reactions, it will be an important addition to the indications for the use of this drug.

THE USE OF DIPHENHYDRAMINE HYDROCHLORIDE ("BENADRYL HYDROCHLORIDE") INTRAVENOUSLY

Several reports [11] have been made on the use of diphenhydramine hydrochloride intravenously. The method of administration which we have used is to give a dilution of 20 to 50 mg. diphenhydramine hydrochloride [14] in 75 to 100 cc. of isotonic solution of sodium chloride by intravenous drip in approximately ten minutes. This is the method used by McElin and Horton.[6] McGavack, Elias and Boyd [8a] also gave the drug intravenously but did not mention the method of administration. Sixteen of the patients in this series were treated intravenously. The results are shown in table 5. Of the 11 patients with urticaria who were treated, 10 had complete cessation of itching at the completion of the infusion. In the other patient the drug was ineffective. In the fair-skinned patients it was possible to see definite blanching of the urticarial wheals. In no instance was there any immediate change in the size or shape of the lesions. In several patients who exhibited dermographism prior to the infusion, this phenomenon could not be elicited after the injections. Several others showed dermographism which continued to be present after the intravenous administration of the drug. In 2 patients the urticaria disappeared and did not reappear. In others the relief from pruritus lasted from four to eight hours. These patients were then maintained on an oral dosage of the drug with continued freedom from symptoms. Two patients with contact dermatitis were given diphenhydramine hydrochloride intravenously with immediate complete relief of the associated pruritus. As stated before, the use of the drug in contact dermatitis is thought by some to be ineffectual. We consider that the intravenous use of the drug eliminates other factors in deciding whether or not the medicament is effective in a specific disease. The response, if present, is immediate and can be judged more objectively than can be done after its oral use. Further study on the intravenous use of this drug in contact dermatitis and other conditions in which its efficacy is equivocal will aid in the establishment of indications for its use. Generally, the relief of the pruritus in both urticaria and contact dermatitis occurred before the infusion was terminated. This has led us to believe that smaller doses may be equally effective. Our usual dose in a child is 20 mg. and in an adult 30 mg. Two patients who were given the drug intravenously during an acute attack of bronchial asthma failed to note improvement. One patient with tabetic crises also was not relieved.

TABLE 5.—*Intravenous Use of Diphenhydramine Hydrochloride*

Diagnosis	No. of Cases	Results	
		Good	Poor
Urticaria	11	10 (Pruritus controlled)	1
Contact dermatitis	2	2	
Bronchial asthma	2	..	2
Tabetic crises	1	..	1

TOXICITY

The commonest side effects of diphenhydramine hydrochloride are drowsiness, dizziness, dryness of the mouth, nervousness and weakness. Other less common side effects that have been reported are fatigue, epigastric distress, irritability, dilated pupils accompanied by blurring of vision, nausea and vomiting, difficulty in coordination and urinary frequency. There have been no serious side effects reported. A recent report [15] suggested the possibility that the agent was responsible for an automobile accident as a result of the drowsiness which followed its use. Studies done on renal and hepatic function, blood and urine changes show no evidence of injury by the drug.[8a] In our patients we noted that drowsiness was the most frequent side effect and this was usually successfully combated by the administration of 2.5 to 5 mg. racemic amphetamine sulfate ("benzedrine sulfate" N. N. R.) in conjunction with the diphenhydramine hydrochloride. If the latter was taken over a period of several weeks the side effects usually wore off.

The side effects from the intravenous use of the drug were similar to those after its oral use. Almost all the patients were drowsy and/or dizzy following the injection. One patient had a shaking chill which lasted about two minutes, following which she had no further aftermath except drowsiness. McGavack and associates [8a] reported 1 case in which an intravenous injection of the drug was followed by a severe chill, headache, low back pain and a slight decrease in temperature, but the patient had no change in either pulse rate or blood pressure. This reaction occurred almost immediately after she received 30 mg. of the drug, but no mention is made of the dilution factor or the speed of administration.

COMMENT

Horton [5] stated that in his opinion the common denominator of allergic disorders is the underlying problem of edema provoked by the local release of histamine or histamine-like substance. In the mucous membrane of the respiratory tract this edema is recognized as hay fever or vasomotor rhinitis. In the skin it appears as urticaria or angioneurotic edema; in the labyrinth, as Ménière's syndrome. If this conception of a common etiologic factor is a true one, then the use of antihistaminic substances and desensitization with histamine in these conditions is consistent and has a physiologic basis.

SUMMARY AND CONCLUSIONS

In this study 137 patients, comprising 140 cases, were treated with diphenhydramine hydrochloride ("benadryl hydrochloride"). The results obtained in the treatment of urticaria and hay fever were encour-

14. "Benadryl hydrochloride" is supplied by Parke, Davis & Company.

15. Slater, B. J., and Francis, N.: Benadryl: A Contributing Cause of an Accident, J. A. M. A. **132**: 212 (Sept. 28) 1946.

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aging and agree with most previous reports. Use of this drug in bronchial asthma has not proved particularly effective.

In a small series of patients with contact dermatitis we obtained encouraging results. We believe that the drug has a place in the treatment of this disease.

The results obtained in the treatment of a large number of different conditions are reported, but no attempt at evaluation is made because of the small number of patients treated in each group.

The use of diphenhydramine hydrochloride in the prevention of transfusion reactions suggests that the drug may be efficacious in this condition.

The intravenous use of the agent in 16 patients is discussed. Its administration in this manner eliminates other factors in deciding whether or not the drug is effective in a specific condition. It is considered that this method of administration is an aid to the establishment of indications for use of the drug in those conditions in which its efficacy is equivocal. It is concluded that the administration of diphenhydramine hydrochloride has a sound physiologic basis, and it is suggested that there should be further investigation of the many possible fields of usefulness for this and related drugs.

INTRADERMAL TEST FOR SENSITIVITY TO IODOPYRACET INJECTION, OR "DIODRAST"

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Iodopyracet injection, or "diodrast" N. N. R. (the diethanolamine salt of 3,5-diiodo-4-pyridone-*N*-acetic acid), is probably the drug most widely used as a contrast agent for intravenous urography. It is dispensed in 10, 20 and 30 cc. ampules of a 35 per cent concentration ("diodrast sterile solution"). The iodine content of "diodrast" is approximately 49 per cent. The other drugs used for visualization of the urinary tract, namely "iopax," "neo-iopax" N. N. R., "skiodan" N. N. R., "hippuran" N. N. R. and "diodrast compound solution" N. N. R., although they have different chemical construction, all contain iodine.[1] Sensitivity reactions are probably, although not necessarily, dependent on the iodine in the compound. It has been suggested that perhaps the person is sensitive not to the iodine but to a new substance produced by the body when the contrast medium is given. Reactions are not dependent on the amount of iodide injected; concentrations as great as 70 per cent "diodrast"[2] or 80 per cent sodium iodide[3] are used with impunity for visualization of the heart chambers and pulmonary vessels and for arteriography. On the other hand, reactions have been reported from intravenous administration of as little as 1 to 3 cc. of iodopyracet injection. Sensitivity reactions, moderate and severe, are probably more frequent than is generally realized. From personal communications it is evident that deaths from severe reactions are also much commoner than reports would indicate. In 1939 the Winthrop Chemical Company, Inc., stated that probably five million intravenous urograms had been made. At present probably many millions of patients have been subjected to this most helpful diagnostic procedure. In 1942 Pendergrass[4] reported a series of 661,800 intravenous urograms gathered from over the country, and in this group there were 10 deaths which resulted from immediate reaction of the patient to the contrast drug. Of these, there were 5 in patients who had received 20 cc. of 35 per cent "diodrast" solution and had had a perfectly typical sensitivity reaction. One of these 5 deaths was in a patient of ours; hence our particular interest in the various tests devised to give evidence of a personal sensitivity to this drug.

Of approximately 18,000 intravenous urograms made in this clinic the one and only death attributed to sensitivity to the contrast medium occurred in 1941. It was similar to those of Goldburgh and Baer,[5] Crane[6] and Dolan.[7] We shall not report this fatal case in detail. Briefly, the patient was a man aged 43 with malignant hypertension; the blood pressure was 260 systolic and 150 diastolic. He had had an old cerebral vascular accident. The heart was not enlarged; there were no signs of its failure. The patient had never had any allergic reaction, nor was he aware of sensitivity to any drug. He had had a complete medical workup, and the intravenous urograms were requested in the routine investigation of the upper part of the urinary tract as possible cause for his hypertension. One cubic centimeter of "diodrast compound solution" was injected, and the physician waited three minutes for any possible reaction. There was none. The remaining 19 cc. was injected over a period of five minutes. A minute after the termination of the injection, which was nine minutes from the beginning, the patient complained of itchiness all over his body and sneezed three or four times. Two or three minutes later his eyes became glassy and he had difficulty in breathing. He was immediately given a solution of epinephrine ("adrenalin" N. N. R.) subcutaneously, and oxygen was administered. Eight minutes later the patient had a generalized convulsion and stopped breathing for about thirty seconds. After this he became cyanotic. An airway had been inserted, and a nasal catheter was introduced to remove the mucus. The patient was evidently in shock. The blood pressure could not be obtained, and the pulse was not felt. There was considerable spasticity of the jaws, intermittent spasm of first one arm and then the other. He was given further injections of epinephrine and nikethamide subcutaneously and then intravenously. Precordial pulsations were from 110 to 120 per minute. He looked

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1. von Lichtenberg, A.: The Principles of Intravenous Urography, J. Urol. **25**: 249, 1931.

2. Wagner, F. B., Jr.: Arteriography in Renal Diagnoses, J. Urol. **56**: 625, 1946.

3. Nelson, O. A.: Arteriography in Renal and Abdominal Conditions, J. Urol. **53**: 521, 1945.

4. Pendergrass, E. P.; Chamberlin, G. W.; Godfrey, E. W., and Burdick, E. D.: A Survey of Deaths and Unfavorable Sequelae Following the Administration of Contrast Media, Am. J. Roentgenol. **48**: 741, 1942.

5. Goldburgh, H. L., and Baer, S.: Death Following the Intravenous Administration of Diodrast, J. A. M. A. **118**: 1051 (March 28) 1942.

6. Crane, J. J.: Sudden Death Following Intravenous Administration of Diodrast for Intravenous Urography, J. Urol. **42**: 745, 1939.

7. Dolan, L. P.: Allergic Death Due to Intravenous Use of Diodrast, J. A. M. A. **114**: 138 (Jan. 13) 1940.

as though he was going to survive the shock, when he suddenly had a second generalized convulsion. This was about forty minutes from the time of the first injection. During this convulsion his respirations ceased and his heartbeat stopped. In spite of intracardiac injections the patient died forty-five minutes after the beginning of the injection of diodrast.

There is no question but that the patient presented a definite reaction to the contrast agent. There followed itching, sneezing, respiratory difficulty and probably spasm of the cerebral vessels. This probably caused the generalized convulsive seizures, which were followed by shock and collapse. It is possible that the second convulsion was caused by an intracerebral hemorrhage during the period of tonic spasm of the cerebral vessels.

There have been several tests reported in the literature for sensitivity to "diodrast." Dolan [7] has reported on the oral test, in which 1 to 2 cc. of the agent is placed under the tongue of the patient. Ten minutes later, provided he has had no reaction, he is told to swallow the drug. Thirty minutes is allowed to elapse to see if there is any general reaction. A positive reaction to this test is first a feeling of numbness of the lips, then the tongue feels peculiar; it feels thick and swollen and finally gives the sensation of its filling the whole mouth. The typical sensitivity reaction that Dolan described lasted an hour. Archer and Harris [8] recommended the ocular test, in which 1 drop of the contrast agent is put in the conjunctiva of one eye. One and a half to three and a half minutes later both eyes are examined and compared for reaction, which consists of inflammation and reddening and irritation of the conjunctiva. A third test, or the intradermal method, has been reported by Naterman.[9] An injection of 0.05 cc. of the drug is given intradermally in the arm with a control injection just below it, and in a few minutes these sites are examined.

Our routine intradermal test consists in the injection of 0.1 cc. of "diodrast" intradermally on the forearm, and the injection of a control solution 15 cm. below the first site. A positive test is one in which the wheal formed is 1 cm. or more in diameter and/or the erythema is 1 cm. or more or the wheal and erythema are 1.5 cm. or more. The results are read five to ten minutes after the injection. We combine with this the slow intravenous administration of the drug. One cubic centimeter of the agent is injected intravenously, and then there is a three minute wait; if no reaction occurs, the remaining 19 cc. is then injected slowly over a five minute period. The patient is watched carefully, and the injection is stopped at once if there appears any suggestion of a sensitivity reaction. There is always kept nearby an emergency tray with epinephrine, ephedrine, tongue forceps and mouth gag. An oxygen tank and oxygen face mask are also kept nearby for emergency use.

Reactions to iodopyracet injection can be classified as delayed and immediate. We are not considering here the delayed reactions such as dermatitis or uremia which are caused by preexisting severe renal damage. We are concerned here only with the immediate sensitivity reaction to the drug. A mild reaction, seen in many patients, consists of flushing of the face and neck and slight nausea. A moderate reaction includes urticaria, itching, nausea and vomiting, rhinitis and sneezing. A severe reaction includes all the preceding symptoms plus severe lacrimation, edema of the eyelids, a sense of constriction of the larynx, coughing, rattling respiration, cyanosis, syncope and shock. These reactions are entirely similar to anaphylactic reactions and are probably due to the sensitivity of the person to the contrast agent. It is possible that the iodine itself is not the sensitizing agent but that it may combine with something in the body to produce a new substance to which the person is sensitive.

This is a report on 1,675 patients who received the intradermal test for possible anaphylactic reaction to "diodrast" according to the aforementioned technic (fig. 1). In the whole group 1,436, or 86 per cent, of the patients had a negative cutaneous reaction, while 239, or 14 per cent, had a positive reaction. This may be compared with results in Naterman's [9] series of 404 patients, in which 249, or 61 per cent, had negative reactions and 155, or 39 per cent had positive reactions. This variation may be explained by the difference in criteria in reading the tests. Of our 1,436 patients who had a negative intradermal test 56, or 4 per cent, had a generalized reaction to the intravenous injection of the contrast medium. Of our 239 patients who had a positive skin test 39, or 16 per cent, had a positive general reaction. There were 95, or 5.6 per cent, of the 1,675 patients who had a generalized reaction to the intravenous injection of this agent. A priori, it is evident that the incidence of general reaction to the drug in this series was four times as high in those who had a positive skin test as in those with a negative intradermal test. These figures were studied by statistical methods, and the result from plotting the contingency tables is exactly similar to the a priori conclusion. However, one cannot say from these tables that persons with a positive skin test are four times as susceptible to reactions as those with a negative skin test but merely that they are more apt to have a general reaction. It is interesting that the percentage of the patients with a negative skin test having a general reaction in Naterman's series is approximately the same as in ours, namely, 5.6 per cent. However, in his series those with a positive skin test had a higher percentage of generalized reactions than ours, 42 per cent. This can probably be explained by the difference in the criteria of a general reaction. For instance, he included, and we did not, such minor signs as slight nausea and flushing as a general reaction. Included as positive reactions in our series are only those who had the symptoms previously named as moderate and severe reactions. The conclusion from both these series is that the patient who has a postive skin test is more apt to have a positive general reaction than is one who has a negative cutaneous reaction.

It is believed that patients with a personal history of allergy, asthma, hay fever or sensitivity to a drug are more apt to have a general reaction to the iodopyracet injection. For this reason we have separated our whole group into those with and those without such a personal history. In the latter group there are 1,570 patients

8. Archer, V. W., and Harris, I. D.: Ocular Test for Sensitivity to Diodrast Prior to Intravenous Urography, Am. J. Roentgenol. **48**: 763, 1942.

9. Naterman, H. L., and Robins, S. A.: Cutaneous Test with Diodrast to Predict Allergic Systemic Reactions, J. A. M. A. **119**: 491 (June 6) 1942.

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(fig. 2), and 1,343, or 85 per cent, of these had a negtive skin test and only 47 patients, or 3.5 per cent, had a positive general reaction. Of the 227 patients with a negative skin test 31, or 13.6 per cent, had a positive general reaction.

These figures should be compared with those from the group of allergic patients (fig. 3). There are 105 patients, or 6.5 per cent of the whole group, with a personal history of asthma, hay fever or drug sensitivity. It is of interest that Naterman also had approximately 10 per cent of his patients in this group. In this group of 105 patients 93, or 88 per cent, had negative skin tests and only 12, or approximately 12 per cent, had a positive cutaneous reaction. A higher percentage with a positive skin test in these particular patients was expected. Of the 93 patients who had a negative test 9, or 10 per cent, had a general reaction, as compared with 3.5 per cent in the nonallergic group. Of the 12 patients who had a positive skin test 8, or 70 per cent, had a general reaction, as compared with 13.6 in the nonallergic group. It is evident, therefore, that the patient with a personal history of asthma, hay fever

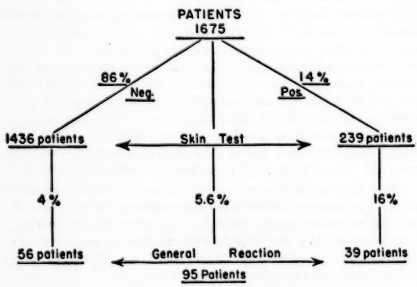

Fig. 1.—Results of intradermal sensitivity tests.

or drug sensitivity and a positive skin test is apt to have a generalized reaction. Contingency tables for statistical purposes were drawn up for this group also, and exactly the same conclusion is drawn as was arrived at a priori. This is so striking that we believe that any patient with a personal history of asthma and a positive skin test should not have intravenous "diodrast" injected.

These conclusions are based, of course, on a large series of patients, and there will occur individual instances contrary to these observations. For instance, 2 recent patients had severe reaction, difficulty in breathing, substernal oppression and moderate vasomotor collapse. Neither of these had a personal history of allergy or drug sensitivity. Neither of them had a positive skin reaction before the contrast agent was given, and both had a negative second skin test the following day. This, of course, does not mean that the skin tests are of no value. It is well known in clinical allergy that allergic patients may have a negative skin test to the substance to which they are allergic. It is known also that many patients with a positive skin test to a certain substance will have a negative clinical sensitivity. This may be rather puzzling and perhaps contradictory, but nevertheless it is a frequent clinical occurrence. The reaction of the 2 patients already mentioned is evidently a manifestation of this same phenomenon.

CONCLUSIONS

The conclusions from this study are as follows: 1. Either the intradermal or the ocular test for sensitivity to iodopyracet injection, or "diodrast," should be performed before the intravenous injection of the drug

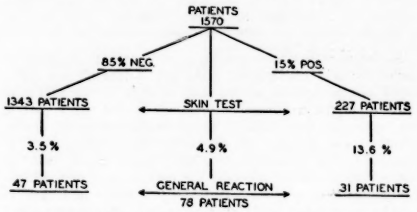

Fig. 2.—Sensitivity to drug in patients with no personal history of allergy.

for urography. 2. If the intradermal test is negative, the patient has less chance of having a general reaction than he would if his skin test had been positive. 3. Because of this, however, one should be no less careful in the precautions taken in giving the drug intravenously. 4. If there is a personal history of asthma, hay fever or drug sensitivity and the skin test is positive, there is a definite possibility that the patient will have a general reaction to the drug, and the "diodrast" should not be injected. It may well be asked, is the skin test worth while, or should it be done at all? If the patient has a slight cutaneous reaction or a personal history of asthma with a negative reaction, why do we go ahead and give the contrast agent as we do? The explanation is that the vast majority of these patients do not have a general reaction. This is evident in the figures presented. Too many patients would be denied this important diagnostic aid if it was refused to all those with a slight reaction or a history of allergy

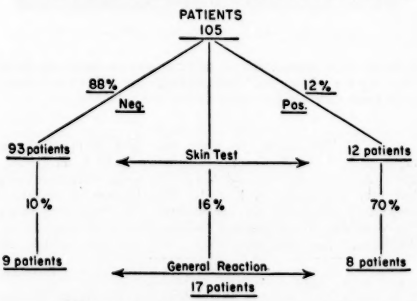

Fig. 3.—Results of intradermal sensitivity tests in patients with personal history of asthma or allergy.

and a negative skin test. Furthermore, there is a definite small group of persons who should not have the "diodrast" injected. This sensitivity test is one more precaution which may be taken to prevent complications from a helpful, important and widely used diagnostic procedure.

Clinical Notes, Suggestions and New Instruments

REACTIONS TO A BISMUTH COMPOUND

Toxic Manifestations Following the Use of the Bismuth Salt of Heptadienecarboxylic Acid in Suppositories

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So far as it has been possible to determine, the heptadienecarboxylic acid (diallylacetic acid) salt of bismuth was introduced into therapeutics as "medobis" in 1937. It was said to be effective in the treatment of infections of the upper part of the respiratory tract both by intramuscular and rectal administration, and no toxic manifestations were reported.[1] The first mention of its use in the United States was in 1943,[2] at which time it was recommended for the treatment of tonsillitis, pharyngitis and gingivostomatitis. Its efficacy and lack of toxicity were subsequently affirmed in two other publications.[3]

Vacuolization and swelling of liver cells in case 2.

Because these reports fail to mention serious illness or death after the use of "analbis" suppositories,[4] the following 4 cases, 3 of them with autopsy observations, are submitted.

REPORT OF CASES

CASE 1.—This acutely ill white girl, aged 27 months, was admitted to Norwalk General Hospital at 2:10 a. m. Dec. 2, 1946. An adenoidectomy with the patient under ether anesthesia had been performed on Nov. 12, 1946 because of recurrent respiratory infections; the convalescence had been uneventful. On November 27 tenderness of the gums and a low grade fever developed. The child was given a 0.5 per cent solution of chromic acid and hydrogen peroxide locally and the children's size suppositories[4] rectally, two on November 27 and two more on November 28. The next day 0.5 cc. of a bismuth ascorbate preparation was given intramuscularly. On November 30 there was noted drowsiness progressing to coma, a temperature of 104 F. and vomiting. On the night of December 1 the patient had three brief convulsions, which were characterized by sudden stiffening of the body and extremities, slight opisthotonus and cyanosis followed by the vomiting of 200 cc. of coffee-ground material.

At the time of admission the temperature was 97.4 F., the respiratory rate 22 and the pulse rate 140. The child was acutely ill and comatose. The gums bled easily. The fundal veins were engorged. A sharp smooth liver edge extended 1 fingerbreadth below the costal margin and seemed tender. The arms and legs were stiffly extended; the back was arched; the neck, however, was supple. Deep reflexes were equal and active; abdominal reflexes were absent, and the great toe reflex was present bilaterally.

Laboratory data were as follows: The hemoglobin content of the blood was 94 per cent (Sahli); red blood cell count 5.1 million; white blood cell count 31,150; polymorphonuclear leukocytes 78 per cent with stabs 2 per cent and lymphocytes 22 per cent. Urinalysis was normal. Spinal tap showed clear fluid under the usual pressure (estimated); 10 cells were present; culture revealed no growth.

Treatment consisted in the administration of penicillin, 50,000 units intramuscularly every three hours, and streptomycin, 75 mg. every three hours intramuscularly, and saline clyses. However, the course was rapidly downhill. The temperature rose steadily to 105 F.; the pulse rate to 160 plus; the respiratory rate to 40. There were constant facial twitchings and spasmodic stiffening of the arms and legs. The deep reflexes disappeared within a few hours after admission. Emesis of coffee-ground material, which gave a positive benzidine reaction, recurred. She died at 5:30 a. m. Dec. 3, 1946.

The salient gross observations at autopsy included pulmonary edema, the lungs weighing 1,000 Gm. together; a large smooth, pale yellow liver weighing 1,200 Gm.; an ulcer measuring 2 mm. deep, 15 mm. long and 8 mm. wide on the posterior duodenal wall; slightly yellow renal cortex, and an edematous brain with a moderate cerebellar pressure cone.

The microscopic findings were as follows: In the lungs there was congestion of the pulmonary capillaries, and edema fluid was present in the alveoli. There were more megakaryocytes than usual in the capillaries.

The cells of the liver were swollen so that the capillaries were obliterated with the portal triads compressed. The cytoplasm was decidedly vacuolated, particularly in the periportal third of each lobule. The nuclei were unaltered. The cell boundaries were prominent and eosinophilic (fig. 1).

The spleen had areas of necrosis with scattered nuclear fragments in the centers of the malpighian corpuscles. The lymphocytes around the germinal centers were usually well preserved. However, around each corpuscle and sometimes extending into it was a ring of hemorrhage and neutrophilic leukocytes. The sinuses of the red pulp were congested and there were some hemorrhages into the cords of Billroth.

Examination of the kidneys revealed that the epithelial cells of the tubules in the cortex were swollen and vacuolated. This did not include the collecting tubules.

The ulcer of the duodenum involved the mucosa and submucosa. It was associated with an exudate of polymorphonuclear leukocytes in the surrounding tissues.

The brain showed no abnormalities in sections stained with hematoxylin and eosin. This was also true of the heart, adrenals, pancreas, stomach and ovary. Tissue for stains for fats was not available.

The anatomic diagnoses were: edema of the brain with cerebellar pressure cone; acute duodenal ulcer; fatty liver; fat in the renal tubular epithelium; focal necroses of the spleen, and pulmonary congestion and edema.

From the Norwalk General Hospital and the Department of Pathology, Yale University School of Medicine.

1. Kowarz, W.: Klinische Erfahrungen über das Wismut preparat Medobis bei katarrhalischen Erkrankungen der oberen Suftweze, Wien. med. Wchnschr. **87**: 1233 (Nov. 20) 1937.

2. Silber, S.: The Treatment of Tonsillitis, Pharyngitis and Gingivostomatitis with the Bismuth Salt of Heptadienecarboxylic Acid in Cocoa Butter Suppositories, J. Pediat. **23**: 59, 1943.

3. Silber, S.: Bismuth Suppositories (Analbis) in Throat Infections: Bacteriology and Pharmacology; Effectiveness, Absorption, Excretion, Toxicity J. Pediat. **25**: 244, 1944. Stovin, J.: The Treatment of Acute Tonsillitis by Rectal Administration of a New Bismuth Compound, Arch. Otolaryng. **39**: 259 (March) 1944.

4. Marketed as "analbis" suppositories by Specific Pharmaceuticals, Inc. Each adult size suppository contains 135 mg. of the bismuth salt of diallylacetic acid in a cocoa butter base. The children's size contains one-half the amount in the adult size.

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A girl aged 27 months had an uneventful adenoidectomy. Two weeks later she received four of the children's size suppositories for control of gingivitis. In four days coma and convulsions developed, and death followed within seventy-two hours. At autopsy, cerebral edema, a swollen fatty liver and an acute duodenal ulcer were present.

CASE 2.—A white boy aged 6 years was admitted to Norwalk General Hospital on Jan. 2, 1947 because of asthma of four years' duration. Eczema at the age of 6 months had cleared up when orange juice was eliminated from his diet. For the four years before admission there had been nocturnal attacks of asthma, each lasting about twenty minutes. Skin tests revealed sensitivity to chocolate, peaches, celery and raw apples. Frequent sore throats were treated with penicillin and sulfonamide compounds until he became sensitive to these drugs. Starting about three weeks before this admission he had received the children's size of the suppositories containing the bismuth salt of diallylacetic acid, one daily, continuing to the time of admission. No toxic manifestations were noted.

He was sent to the hospital for study and to have a tonsillectomy performed. Physical examination revealed a thin child with large tonsils and shotty bilateral cervical and inguinal lymphadenopathy. There were no other abnormal observations. Admission laboratory data were as follows: Nose and throat cultures were negative for pathogens. Urinalysis was normal. The examination of the blood revealed red blood cell count 4.4 millions, with hemoglobin 84 per cent (Sahli); white blood cell count 11,700, with a differential count of polymorphonuclears 39 per cent, lymphocytes 49 per cent, basophils 1 per cent, eosinophils 8 per cent and monocytes 3 per cent. The hematocrit determination was 40 per cent of packed red cells; the Wintrobe corrected sedimentation rate was 24. The blood clotting time was four minutes, the bleeding time one minute. In the blood the nonprotein nitrogen level was 25 mg.; urea nitrogen 15.5 mg.; cholesterol 172.2 mg. and sugar 81 mg. per hundred cubic centimeters.

In the hospital he was put on an antiallergy diet and given a daily injection of 1 cc. of crude liver extract as well as vitamin B complex tablets orally. There were no asthmatic attacks. On January 6 he vomited several times and complained of pain at the site of one of the injections. His pharynx was congested. There was slight reddening of the painful injection site, and his temperature rose to 101 F. He was given acetylsalicylic acid, "kaopectate" (an intestinal adsorbent containing 5.83 Gm. kaolin and 0.13 Gm. pectin in each 30 cc.) and "analbis" suppositories, children's size. The latter were administered singly as follows: January 6, 6 p. m., January 7, 6 a. m., January 8, 6 a. m., January 8, 6 p. m., a total of four such suppositories in forty-eight hours. At this time he seemed better. The night of January 8 he was prepared for tonsillectomy by administration of an enema and withholding of food by mouth. He went to the operating room at 7:30 a. m. January 9. Tonsillectomy and adenoidectomy were performed with the patient under drop ether anesthesia without untoward event. On return to the ward at 9 a. m. his pulse was said to be weak and irregular, but by 9:30 a. m. he reacted and seemed well. He slept most of the day. At 5:30 p. m. there was a sudden change; he was rigid and comatose and apparently stopped breathing. From this time on he remained comatose. There were asthmatic wheezes in the lungs at first, but these disappeared later in the evening to be replaced by moist rales. The temperature rose steadily, reaching 107.4 F. at 10 p. m. The pulse rate ranged between 140 and 180. His color varied from cyanotic to pale to normal. There were irregular twitchings at times, rigidity at other times. Reflexes came and went symmetrically. The pupils varied from normal to dilated. Urinalysis at 11:30 p. m. was negative for sugar, acetone and formed elements, but the albumin was 2 plus. He was treated with many injections of epinephrine, intravenous dextrose solution, plasma, oxygen and diphenhydramine hydrochloride ("benadryl hydrochloride" N. N. R.), but died at 2 a. m. on Jan. 10, 1947.

The gross observations at autopsy were focal pulmonary congestion, the lungs weighing 320 Gm.; a yellow enlarged liver weighing 770 Gm.; a soft diffluent spleen weighing 94 Gm., and an edematous brain with a moderate cerebellar pressure cone. Microscopically the liver, spleen and other organs were identical with those of case 1. Fat stains (Sudan IV) stained the vacuoles in the liver and renal tubular cells a brilliant red color.[5]

On chemical analysis of the liver and brain there were found more than 0.05 but less than 0.10 part per million of bismuth in the brain, and slightly more than 0.10 part per million of bismuth in the liver.[6] This is considerably less than the median concentrations in therapeutic antisyphilitic usage of 6.8 parts per million in the liver and 0.6 part per million in the brain.[7]

Autopsy diagnoses were edema of the brain with cerebellar pressure cone; fatty liver; fat in the renal tubular epithelium; focal necroses of the spleen, and pulmonary congestion.

An asthmatic boy aged 6 years received one suppository containing the bismuth salt each day for three weeks. No suppositories were given for four days, but he then received four suppositories in forty-eight hours for a pharyngitis. On the fifth day the pharyngitis had subsided, food was withheld and a tonsillectomy performed with the patient under ether anesthesia. Coma supervened within twenty-four hours, and death followed within thirty-six hours. At autopsy there was cerebral edema and a fatty liver. The fasting state plus anesthesia provided an ideal substrate for the action of any hepatotoxin.

CASE 3.—A white boy aged 2 years was admitted to the Norwalk General Hospital at 1:10 p. m. Jan. 16, 1947 in coma. The family history was noncontributory except for asthma in a sibling. The patient was well until Jan. 14, 1947, when there developed a sore throat, bilateral otitis media and an elevation of temperature to 104 F. The children's size of the bismuth-containing suppositories were administered, one at noon and one in the evening on January 15. At about 1 p. m. January 16 he was found stuporous and brought to the hospital.

On examination he was limp and critically ill. The reflexes were absent, including the corneal; the heart rate was 40; the blood pressure 60 systolic and 40 diastolic; the rectal temperature 95.2 F., and the respiratory rate 22. The tonsils were enlarged and injected, and the cervical nodes were somewhat enlarged. The hemoglobin level was 87 per cent (Sahli); the red blood cell count 4.19 millions; the white blood cell count 6,600; the differential count showed polymorphonuclears 68 per cent, with stabs 1 per cent and lymphocytes 31 per cent.

The patient was given nikethamide, oxygen and an infusion of dextrose solution. He seemed much better, and by 4 p. m. the blood pressure was 118 systolic and 48 diastolic. By the evening he was well enough to speak a little. The temperature rose to 100 F. that evening. At 10 a. m. January 17 the temperature rose to 103 F.; the child became lethargic and could scarcely be aroused. The respiratory rate was 40, the pulse rate 136. There was anisocoria and some drooping of the left eyelid. Penicillin therapy was started. At 3 p. m. the administration of BAL (2,3-dimercaptopropanol) was instituted; he was given 6 cc. (5 mg. per kilogram of body weight) every three hours for 14 doses. At 10 p. m. the temperature had fallen to 100.6 F., and thereafter it did not exceed 100 F. The macular rash frequently noted after BAL therapy appeared at 3 p. m. January 18 and lasted until January 22, at which time the patient was discharged, apparently well.

Laboratory examinations performed January 18 when he seemed almost well were as follows: Nose and throat cultures

5. Dr. Dorothy Andersen, to whom I am indebted for case 4, informs me that she knows of several other unreported deaths which followed the use of this drug and in which the autopsy observations were similar to those in the cases herein described.

6. These analyses were performed by Dr. Harry J. Fisher, chemist in charge, Connecticut Agricultural Experiment Station, New Haven.

7. Sollmann, T.; Cole, H. N., and Henderson, K.: Clinical Excretion of Bismuth: VII. The Autopsy Distribution of Bismuth in Patients After Clinical Bismuth Treatment, Am. J. Syph., Gonor. & Ven. Dis. **22**: 555, 1938.

were negative for pathogens. The blood cholesterol level was 253 mg., sugar 77 mg., urea nitrogen 16.4 mg. and nonprotein nitrogen 50 mg. per hundred cubic centimeters. The icterus index was 5.5 units. The hemoglobin level was 71 per cent (Sahli), the red blood cell count 4.04 millions, the white blood cell count 11,000, with segmented polymorphonuclears 16 per cent, stabs 3 per cent and lymphocytes 81 per cent. Urinalysis was normal except for a 2 plus sugar reaction.

A boy 2 years of age was given two "analbis" suppositories for otitis media and pharyngitis. About eighteen hours after the second suppository he went into severe collapse, followed the next day by fever and lethargy. He recovered after supportive measures and BAL therapy. The total dosage of BAL per kilogram of body weight is one of the largest ever given. This drug was administered at the suggestion of Dr. W. T. Salter, professor of pharmacology at the Yale University School of Medicine, in the belief that the unknown toxic agent might be a heavy metal. Whether its use was of any value is a matter of conjecture.

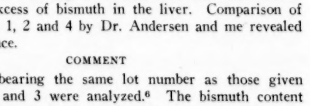
CASE 4.—This case is contributed by Dr. Dorothy H. Andersen of Babies Hospital, New York, whose summary of the case is quoted.

A girl aged 2½ years had been well until Dec. 18, 1946, at which time there developed a cough, an elevation of temperature to 102 F., and an apparent infection of the upper part of the respiratory tract. She vomited twice. On examination she was moderately dehydrated; the pharynx was red and swollen; the liver was not palpable. She was given rectal fluids, acetylsalicylic acid and three suppositories containing the bismuth salt of diallylacetic acid in the course of about twenty-four hours. By December 20 she appeared well. At 3 a. m. December 21 she awoke suddenly and vomited. Later that day she was admitted to Babies Hospital because of drowsiness. She was semicomatose on admission; the abdomen was rounded and soft, the liver large and somewhat tender. She was treated with clyses and a transfusion, but on December 22 she became cyanotic, with slow Cheyne-Stokes respirations, and died. The highest temperature was 100 F.

The chief postmortem observations were a large liver weighing 720 Gm., which was mottled bright red and yellow, mild ascites (100 cc.) and edema of the peritoneal fat and connective tissue, decided edema of the gastric mucosa and extreme cerebral edema. There was no icterus. On microscopic examination, the liver showed acute early necrosis and the renal tubules contained much fat. There was a mild interstitial pneumonia, and examination of other organs revealed little that was unusual. There was no excess of bismuth in the liver. Comparison of slides from cases 1, 2 and 4 by Dr. Andersen and me revealed a close resemblance.

COMMENT

Suppositories bearing the same lot number as those given to patients 1, 2 and 3 were analyzed.[6] The bismuth content was less than that declared (.0150 Gm. against .0225 Gm.). No heavy metals other than bismuth were found. The only substance found besides bismuth was a fatty acid in quantities too small for analysis. This is presumably what is identified in the literature supplied by the company as heptadienecarboxylic acid. More accurately this is said to be diallylacetic acid. The structural formula of the bismuth salt is:



This is closely related to several allyl compounds of known high toxicity, as allyl amine and allyl alcohol and allyl formate, which is hepatoxic in rats.[9]

It is not believed that bismuth is the agent responsible for the toxic action of these suppositories for several reasons. It was present in only small amounts in the organs on which analyses were performed (cases 2 and 4). There were no inclusion bodies in the renal tubular epithelium, nor was there any evident nephritis.[10] Finally, there is no convincing evidence that bismuth has ever caused hepatic damage of the type here described, the so-called bismuth hepatitis[11] doubtless being an instance of syringe transmission of virus hepatitis.

The type of damage to the liver seen at autopsy in these patients is not compatible with virus hepatitis or any of the usual hepatotoxins. The assumption that the heptadienecarboxylic acid or a contaminant thereof may be a hitherto undescribed hepatotoxin seems plausible.

Animal experimentation has not been revealing to date, largely due to inability to secure adequate material. Further studies are in progress in the Department of Pharmacology of the Yale University School of Medicine. The suppositories have been recalled from the market.[12]

CONCLUSION

Four cases are described in which profound collapse, fever, central nervous system symptoms and in 3 cases death followed the administration of suppositories containing the bismuth salt of heptadienecarboxylic acid (diallylacetic acid) for the treatment of infections of the upper part of the respiratory tract in children.

8. Deleted by author.

9. Rosin, A., and Doljanski, L.: Studies on the Early Changes in the Livers of Rats Treated with Various Toxic Agents, with Especial Reference to the Vascular Lesions: II. The Histology of the Rat's Liver in Allyl Formate Poisoning, Am. J. Path. **22**: 317, 1946.

10. Pappenheimer, A., and Maechling, E.: Inclusions in Renal Epithelial Cells Following the Use of Certain Bismuth Preparations, Am. J. Path. **10**: 577, 1934.

11. Kulchar, G. V., and Reynolds, W. J.: Bismuth Hepatitis—A Survey of One Hundred and Twenty-One Cases, J. A. M. A. **120**: 343 (Oct. 3) 1942.

12. According to a letter dated Feb. 17, 1947 from Mr. Herbert P. Plank, Supervising Inspector of Drugs, Devices and Cosmetics, State of Connecticut Dairy and Food Commission.

Council on Physical Medicine

The Council on Physical Medicine has authorized publication of the following article. HOWARD A. CARTER, *Secretary.*

FEDERAL COMMUNICATIONS COMMISSION ANNOUNCES ITS REGULATIONS FOR SHORT WAVE DIATHERMY APPARATUS

After several years of discussions, conferences and hearings, as well as yeoman work on the part of the Radio Technical Planning Board of the radio industry, the Federal Communications Commission on May 9, 1947 released Public Notice number 7722 entitled "Order with Respect to Medical Diathermy and Industrial Heating Equipment and Notice of Proposed Rule Making with Respect to Miscellaneous Equipment."

This document assigned three frequencies, in harmonic progression, for medical diathermy and industrial heating. Channels are 13.66, 27.33 and 40.98 megacycles, corresponding to approximately 22, 11 and 7½ meters wavelength respectively. The widths of the channels are approximately 15, 320 and 40 kilocycles respectively. Harmonic and spurious radiations on frequencies other than those specified shall be suppressed, so that radiation does not exceed a strength of 25 microvolts per meter at a distance of 1,000 feet or more from the diathermy equipment causing such radiation.

Another channel has been assigned, namely 2,450 megacycles, corresponding roughly to 12.2 cm. wavelength. A frequency in the neighborhood of 6 megacycles will be announced later, and frequencies of 915, 5,850, 10,600 and 18,000 megacycles have also been allocated for industrial, scientific and medical use.

At present the commission has not found it necessary to make any rules applicable to surgical diathermy.

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The commission ruled that all diathermy equipment manufactured in the future shall meet these regulations if the equipment is to be used without a license. Manufacturers may now submit apparatus to the Laurel Laboratory of the Federal Communications Commission and receive "type-approval" of the equipment if it meets the rules and regulations. Using a type-approved apparatus, a physician need not obtain an operating license. If a physician is using existing equipment operating on a frequency not assigned, shielding must be employed and certification obtained. This rule refers to apparatus that was purchased prior to July 1, 1947.

Section 18.51 of the Rules and Regulations of the Federal Communications Commission under the caption "Existing Equipment" indicates that there are generally two methods of operating diathermy equipment in compliance with these rules for equipment manufactured after July 1, 1947. The first method is to operate within assigned frequency bands using equipment either "type-approved" or certified by a competent engineer in accordance with the applicable sections of the rules. The second method is to operate on any frequency provided the equipment is operated in a shielded room with a filtered power supply and all radiation on any frequency limited to 15 microvolts per meter at a distance of 1,000 feet or more from the diathermy equipment. Operation in this manner also requires certification by a competent engineer.

A physician owning and operating a diathermy apparatus manufactured prior to July 1, 1947 may continue to operate for a period of five years, provided the equipment does not interfere with authorized radio services. If interference is reported, the physician is responsible for eliminating the disturbance to radio communications. This may be accomplished in some instances by readjusting the existing diathermy appliance. If no means can be provided to eliminate the interference, then the physician becomes subject to the new rules and regulations. That is to say, he must screen the apparatus or acquire frequency controlled equipment.

More than ten years ago the Federal Communications Commission was requested by several radio communication agencies to formulate regulations to control man-made interference caused by diathermy equipment. When short wave diathermy was first marketed, the wavelengths employed were so short that the manufacturers did not anticipate any serious complications. In other words, that part of the radio spectrum used by diathermy was outside the region then generally employed for communications.

It was not long until the amateur radio operators were using these channels for communications, and they observed interference originating from diathermy equipment. The problem would not have been so confusing had these radiofrequency energies been restricted to two or three channels; but the manufacturers of diathermy equipment, being guided by the early clinical investigators, selected channels of several lengths for therapeutic purposes. Time and effort in research eventually established the therapeutic value of the physical agent. The Council on Physical Medicine reached the opinion after careful study that short wave diathermy was merely another means of applying heat to a patient and that it did not matter what wavelength between 30 and 5 meters was employed.

As radio communications expanded and more channels were needed for services such as ship to shore, airplanes to ground, police station to squad car and countless governmental and private services in the interests of the public, nearly all available channels have been assigned for such purposes.

Television was assigned channels and it became an important factor. Diathermy interfered with television in some instances, making the picture in the television receiver indistinguishable.

In 1939 the Federal Communications Commission called a meeting of the interested bodies, who met at Harkness Hall, Columbia University, New York. The representatives present entered into conversations with the object in view of reaching a solution to the problem.

While the manufacturers of diathermy equipment had no desire to make apparatus which would interfere with communications, there seemed to be no simple solution. Screened rooms were suggested, but they were high priced and inconvenient to install. Except in rare instances, screening diathermy apparatus to prevent interference was ruled out as expensive and cumbersome. There would be no interference if all of the radiofrequency energy generated by diathermy could be used efficiently for treatment purposes. Unfortunately, such diathermy apparatus has not been developed as will not radiate energy into space.

In the meantime, radiofrequency energy for industrial purposes had come into general use. Since the demands for communication channels were so great, considerable pressure was put on the Federal Communications Commission to provide as many channels as possible. Fortunately, all diathermy apparatus can be operated on the same radio channel or channels and there is no interference of one unit with another. Hence the interference problems of diathermy and industrial heating were considered one and the same by the commission.

Many installations of diathermy apparatus are used in steel buildings. The buildings themselves in many instances act as shields, and interference with radio communications is greatly reduced. It is relevant to mention that screening may not always act effectively as a shield when there are breaks or openings in the screen. Poor contacts along the door jamb may permit excessive amounts of leakage and thereby cause interference over long distances.

Probably the greatest problem of interference to radio communication is in the congested areas. For example, diathermy apparatus which is not controlled might be used in a physician's office in an apartment building while a resident in an adjacent apartment either on the same floor, upstairs or downstairs, might choose to operate a television receiver. The distance between a television set and the diathermy equipment might conceivably be only the width of the partition. An ordinary partition between the two apartments would be no barrier, since radio energy will go right through it. Without knowing, the physician might cause considerable annoyance to his neighbor. As a matter of fact, the neighbor might be a fellow physician. Indeed, the television receiver may belong to a physician who is causing the interference. Situations such as these might cause poor public relations.

Countless examples might be cited where interference occurs. Probably the most frequent at the present time is interference by stray radio frequency energy with police communications. Diathermy apparatus may be housed in a wooden building and the receivers on the police squad cars cruising in the streets will pick up the radio signal having the greatest field strength when frequency modulation receivers are employed. When amplitude modulation receivers are employed, serious interference will result even though the field strength of the signal radiated by the diathermy equipment is as low as one twentieth of the field strength of the police radio signal. The Federal Communications Commission has received several complaints of this interference with radio receivers on police mobile units.

Some discussion has been raised as to the relative merits of (1) the health of the nation and (2) the protection of the public by the police. While a physician may be treating disease, the police might be hampered by interference caused by a diathermy apparatus in protecting the property of the public. Fortunately, problems of this nature, if indeed they exist, can now be overcome by compliance with the rules and regulations of the Federal Communications Commission.

The medical profession and the manufacturers of diathermy are to be congratulated on the successful cooperation with the Federal Communications Commission and the representatives of other radio industries on reaching an amicable solution of this perplexing problem in the field of radio communications.

REPORTS OF THE COUNCIL

The Council on Physical Medicine has authorized publication of the following reports. HOWARD A. CARTER, *Secretary.*

MINIMUM REQUIREMENTS FOR ACCEPTANCE OF DIATHERMY APPARATUS

These requirements are intended to augment the general requirements for submission of apparatus recorded in the booklet "Official Rules of the Council on Physical Medicine of the American Medical Association," pages 14 and 15. This booklet contains the rules of the Council governing the consideration of products proposed for acceptance and the general rules governing the use of the acceptance statement and seal of the Council.

Information is requested as follows:

I. Evidence to substantiate the therapeutic claims made for diathermy apparatus (Council-adopted article on "Medical Diathermy" contains a list of allowable claims).

II. Data to substantiate the claims made for the heating efficacy of the unit (see explanatory comment).

III. Evidence that radio interference has been reduced to a minimum. To be eligible for acceptance, the diathermy apparatus as it is supplied to the trade must be submitted to the Chief Engineer, Federal Communications Commission, Washington 25, D. C., for testing and "type approval" received. (Write to the Chief Engineer for shipping instructions.)

IV. Manufacturers shall be required to supply a copy of the Listing Report of the Underwriters' Laboratories, Inc., covering the apparatus in question.

V. The power output and input shall be given. The details of measurement must be described in such a manner as to enable the Council to repeat the experiment. (The highest output recorded in section B-1 or C may be used.)

VI. Diagram of the circuit.

VII. A statement giving the facilities provided by the manufacturer or dealer to service diathermy apparatus. A list of service depots shall be given.

VIII. Twenty copies of each piece of current advertising matter.

EXPLANATORY COMMENTS ON THE REQUIREMENTS

Two methods are recommended by the Council on Physical Medicine for substantiating the heating efficacy of diathermy apparatus:

1. Temperature readings in the living muscle tissue of the anterior aspect of the human thigh or

2. Phantom loads:

(*a*) lamps, and

(*b*) calorimeter containing isotonic solution of sodium chloride.

The Council will accept evidence procured by either 1 or 2 or by both.

A. *Thigh Method*

For each treatment technic (pads, cuffs, coils, etc.) six observations of the muscle temperature at the depth of 4 to 5 cm. shall be presented. A brief description of the "thigh method" follows:

A cannula is introduced at the midpoint of the anterior surface of the thigh and inserted for a distance of about 2 inches or until the bone is encountered. Then a thermocouple constructed of constantan and copper placed in a hypodermic or spinal puncture needle is inserted into the cannula. The cold junction of the thermocouple is kept at 0 C. in a vacuum bottle full of cracked ice in water. (Temperature readings may be taken by direct insertion of the hypodermic needle into the thigh. The readings are approximately the same with the two technics.) The couples shall be calibrated with a thermometer which has been certified by the National Bureau of Standards. Readings are recorded both before and after a twenty minute application. The couples are removed from the tissues while the diathermy current is turned on.

The initial and final temperature of each test shall be recorded and the average of the six observations determined. Acceptable data shall consist of at least six readings, each of which shall be not less than 104 F. (See "Tissue Heating by Short Wave Diathermy" by Mortimer and Osborne.)

The temperature of the room in which the test is conducted shall be given. The tolerance of the subject's skin to the heat generated beneath the electrodes shall be the control for input energy. The observer shall state the degree of redness on the surface of the skin immediately after removal of electrodes. He shall also report any tendency of the subject to blister on the surface of the skin under the electrodes.

B. *Phantom Method*

Lamp Loads: A substitute for the "thigh method" is proposed by the Council on Physical Medicine. Lamp loads and saline solutions are employed in the "Phantom Method." Each method of clinical application advocated for the apparatus under consideration (pads, cuffs, coils, drums and air spaced electrodes) shall be tested on loads consisting of tungsten filament lamps arranged as follows:

Lamp Rating (Watts)	Volts	Number of Lamps	Connection
100	32	2	Series
200	115	1	.....
300	115	1	.....

The power absorbed by all three lamp combinations shall be determined by comparing the reading on a photoelectric cell when the lamps are connected to a direct or alternating current through a wattmeter. Readings in watts shall be recorded for the various applicators submitted and/or mentioned in advertising matter. Readings shall be made as follows:

(*a*) Pads, cuffs, and air-spaced electrodes shall be placed on flat metallic plates, which in turn are connected to the aforementioned lamp loads. The output shall be recorded for each applicator using spacing of ½ and 1 inch between the plate and the applicator glass or air recommended for separators. Readings shall be taken on the two spacings for the three combinations of lamps. A total of six observations shall be recorded for each method of application.

(*b*) For coil and drum methods, the lamp load shall be connected to a metallic coil arranged as a helix, 10 inches outside diameter. The number of turns of the helix shall be stated. The spacing between the coil and the applicator for the cable and drum methods shall be 0 and ½ inch. A total of six observations shall be recorded for each method of application.

C. *Calorimeter*

In addition to a report on the lamp loads, the manufacturer is asked to submit data of performance using jars (calorimeter) containing isotonic solution of sodium chloride (physiologic salt solution). For testing the cable and cuff technics a cylindrical jar approximately 15 cm. internal diameter and 30 cm. high is recommended. For testing pads, air-spaced electrodes and drum applicators a rectangular jar is recommended having the internal dimensions of approximately 12 by 25 by 26 cm. At least 3,000 cc. of isotonic solution of sodium chloride (concentration 0.9 Gm. of NaCl per hundred cubic centimeters of solution) shall be used. The firm may use any spacing or any number of turns of cable that will provide the most favorable result for the method of application under test. The manufacturer is asked to describe very carefully the details by which the results were obtained, giving the dimensions of the container, spacing, turns, spacing material used and any other information which will be of assistance to the Council in repeating the experiment. One observation shall be recorded for each application promoted in the advertising and descriptive matter.

When using the calorimeter, the power output in watts is the product of the total thermal capacity and the temperature rise

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(centigrade) divided by a constant (0.24) and the time in seconds. To avoid making a correction due to loss of heat by radiation, it is advisable to make several trial runs to determine the approximate temperature rise over a certain period of time. Then the saline solution in the calorimeter is cooled below room temperature to a point one-half the estimated temperature rise. It is assumed that the absorption of heat from the room will cancel the loss of heat due to radiation from the calorimeter.

GENERAL INSTRUCTIONS

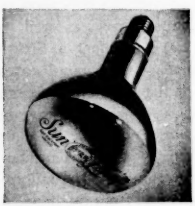
In case of controversy or question of the validity of the data obtained by the "phantom method," the "thigh method" shall be used to establish the heating ability of the diathermy apparatus under test. The Council will give each diathermy apparatus submitted a practical test in an acceptable clinic over a reasonable period of time.

HYTRON SUN LAMP ACCEPTABLE

Manufacturer: Hytron Radio & Electronics Corp., 76 Lafayette Street, Salem, Mass.

The Hytron Sun Lamp, Type A, is a self-contained lamp that can be screwed into an ordinary 110-125 volt alternating current socket. It consumes 275 watts.

The lamp contains a mercury arc tube and ballast coils. The arc tube encloses a drop of mercury, a starting coil and electrodes. The ballast coils consist of tungsten filaments which limit the current passing through the mercury arc tube. The ballast coils become heated and then radiate infra-red and visible light, while the mercury arc tube radiates ultraviolet. The outer glass bulb or glass container, enclosing the sealed space in which lie the mercury arc tube and ballast coils, is made of a glass called "Corning type no. 776." It is said to cut off sharply the transmission of ultraviolet radiation of wavelengths shorter than 2,800 angstroms. Part of the bulb is coated with aluminum and is so curved as to form a reflector.



Hytron Sun Lamp.

The lamp was tested as to the amount of exposure needed to produce erythema. The exposures were made on the inner arm of an average untanned skin at a distance of 2 feet (61 cm.) from the lamp for five, ten and fifteen minutes respectively. The ten and fifteen minute exposures were too long, indicating that the recommended exposure of five minutes at 24 inches (61 cm.) is a wise precaution to prevent burns.

The Council on Physical Medicine voted to include the Hytron Sun Lamp, 275 watt, Type A, in its list of accepted devices.

PREMO NEBULIZER ACCEPTABLE

Manufacturer: Premo Pharmaceutical Laboratories,
443 Broadway,
New York 13.

The Premo Nebulizer is an apparatus, made chiefly of blown glass, which reduces aqueous solutions to a fine mist or aerosol rather than a spray. Although it is especially intended for the administration of isotonic salt solutions, vasoconstrictors and antibacterial agents, no therapeutic claims are made for it. It is not patented.

The apparatus was examined by a Council investigator, whose only criticism concerned the quality of the rubber in the bulb and in the tubing attached to the bulb. On the whole, it was considered satisfactory.

The Council on Physical Medicine voted to include the Premo Nebulizer in its list of accepted devices provided it is packaged separately and no drug is enclosed which is unaccepted by the Council on Pharmacy and Chemistry.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., *Secretary.*

PENICILLIN IN OIL AND WAX (See New and Nonofficial Remedies, 1947, p. 144).

The following dosage forms have been accepted:

PREMO PHARMACEUTICAL LABORATORIES, INC., NEW YORK

Penicillin Calcium in Oil and Wax: 300,000 units per cc., 2 cc. and 5 cc. glass syringes and 10 cc. vials. Calcium penicillin suspended in sesame oil containing 4.8 per cent (W/V) white wax, U. S. P.

Crystalline Penicillin Sodium in Oil and Wax: 300,000 units per cc., 5 cc. and 10 cc. vials. Sodium penicillin suspended in sesame oil containing 4.8 per cent (W/V) white wax, U. S. P.

E. R. SQUIBB & SONS, NEW YORK

Crystalline Penicillin G Sodium in Oil and Wax: Double-cell cartridge, one cell containing 1 cc. sterile crystalline penicillin G sodium, 300,000 units, in peanut oil with bleached beeswax 4.8 per cent (W/V) and one cell containing sterile aspirating test solution with 0.5 per cent chlorobutanol. Packaged with plastic syringe.

PENICILLIN (See New and Nonofficial Remedies, 1947, p. 144).

The following dosage forms have been accepted:

BREWER & COMPANY, INC., WORCESTER, MASS.

Penicillin Sodium: 20 cc. vials containing 100,000 and 200,000 units and combination packages of 100,000 units in 20 cc. vials packaged with a 20 cc. vial of isotonic solution of sodium chloride.

HEYDEN CHEMICAL CORPORATION, NEW YORK

Penicillin Sodium: 200,000, 500,000 and 1,000,000 units in 20 cc. vials.

PREMO PHARMACEUTICAL LABORATORIES, INC., NEW YORK

Penicillin Sodium: 500,000 and 1,000,000 unit vials.

STREPTOMYCIN (See THE JOURNAL, Feb. 1, 1947, p. 320).

The following dosage form has been accepted:

PREMO PHARMACEUTICAL LABORATORIES, INC., NEW YORK

Streptomycin Hydrochloride: Vials containing streptomycin hydrochloride equivalent in activity to 1 Gm. of streptomycin base (one million units).

SULFATHIAZOLE (See New and Nonofficial Remedies, 1947, p. 134).

The following dosage form has been accepted:

COLE CHEMICAL COMPANY, ST. LOUIS

Tablets Sulfathiazole: 0.5 Gm.

SOLUTION OF EPINEPHRINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1947, p. 220).

The following dosage form has been accepted:

BREWER & COMPANY, INC., WORCESTER, MASS.

Solution Epinephrine Hydrochloride 1:1,000: 1 cc. ampuls. Each cubic centimeter contains epinephrine hydrochloride 1 mg. in isotonic solution of sodium chloride with sodium bisulfite 0.1 per cent.

NICOTINIC ACID (See New and Nonofficial Remedies, 1947, p. 512).

The following dosage form has been accepted:

U. S. VITAMIN CORPORATION, NEW YORK

Tablets Niacin: 100 mg.

NICOTINAMIDE (See New and Nonofficial Remedies, 1947, p. 514).

The following dosage form has been accepted:

U. S. VITAMIN CORPORATION, NEW YORK

Tablets Niacinamide: 100 mg.

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SATURDAY, SEPTEMBER 6, 1947

FRACTIONATION OF BLOOD FOR THERAPEUTIC PURPOSES

The value of blood in the prevention of disease rarely depends on the whole tissue. Cohn [1] points out that it more often depends on one or more of the cellular, protein or smaller organic constituents. The need is for quite different constituents of the blood in hemophilia or hypertension, measles or anemia, hemorrhage or infectious hepatitis, edema, shock or hypoproteinemia. The fractionation of plasma has made available the albumins for use in shock and the specific globulins of value in measles, hemophilia, blood typing and blood clotting. The method has also succeeded in separating many of the smaller molecules which are not free in the blood stream but are in highly specific, more or less labile combination with the larger proteins. The fractionation process [2] developed at Harvard Medical School yields all the components of human plasma in five major fractions. The physicochemical system on which the separation depends involves the principle determining electrostatic interactions between proteins and neutral salts, which generally lead to increased solubility, and interactions with less polar organic liquids, which generally lead to precipitating action. The balance between these forces has made possible the definition of conditions leading to far sharper separations than had previously been possible.

The method applied to plasma yields fibrinogen, which is the structural element of blood clotting and is concentrated in fraction I. All the prothrombin, which, converted to thrombin, transforms fibrinogen into fibrin, all the immune globulins for which tests have been carried out, the isohemagglutinins and Rh antibodies, and probably many other components of plasma which are not yet recognized are contained in fractions II and III. The remaining globulins are concentrated in fraction IV.

The protein fraction of blood plasma known as gamma globulin has, according to Stokes,[3] assumed a greatly enhanced significance. By the method of separation of this fraction a number of antibodies in adult blood plasma against foreign protein antigens such as viruses, bacteria, toxins and pollens has been obtained. The process of fractionation of gamma globulin not only separates but also concentrates the antibodies. The concentration of antibodies in the gamma globulin thus prepared is about twenty-five times that of normal pooled plasma. The plasma pools developed by the American Red Cross showed a surprisingly uniform titer of antibodies against the infectious agents endemic to the geographic area in which the blood donor resides. Stokes points out that following the influenza A epidemic of December 1943 the gamma globulins from all areas of the United States gave evidence of a general increase in the antibodies against the influenza A virus. A direct relationship between the height of such antibodies and individual resistance to influenza A has been demonstrated. The general level of donor's antibodies in any population may thus provide an indication of its susceptibility to the epidemic disease as well as evidence of a recent epidemic wave of influenza. Stokes calls attention to the fact that many epidemic diseases of childhood gradually immunize the general population, both by apparent and by inapparent cases, and leave in passage considerable amounts of antibodies in adult plasma. When such adult plasma is pooled from thousands of individuals it probably contains fairly uniform titers of antibodies. Gamma globulin from fractionated pools of plasma concentrates and preserves such antibodies in a readily usable form, which thus far apparently has been free from the danger of serum hepatitis.

Minot and Taylor [4] point out that fractions I, II and III of Cohn's fractions showed antihemophilic activity in studies made in vitro. The injection of preparations of fraction I was comparable in antihemophilic effect to that obtained following the injection of whole blood or plasma. These authors also point out that, in hemophilia, control of local hemorrhage is as important as the control of the blood coagulation time. Antihemophilic globulin has some hemostatic properties. Its action, however, is a matter of minutes to develop. On the other hand, thrombin preparations, which act directly on fibrinogen to produce fibrin clots, require only seconds to produce this effect. For this reason Minot and Taylor believe that thrombin is an ideal hemostatic agent. Preparations rich in prothrombin can be obtained by suitable fractionation of the plasma globulins. Prothrombin can be converted to thrombin by action with tissue thromboplastin derived from brain, lung, placenta or other tissues. The thrombin so obtained may be

1. Cohn, E. J.: Blood Proteins and Their Therapeutic Value, Science **101**: 51 (Jan. 19) 1945.

2. Cohn, E. J.: The Separation of Blood into Fractions of Therapeutic Value, Ann. Int. Med. **26**: 341 (March) 1947.

3. Stokes, Joseph, Jr.: The Use of Gamma Globulin from Large Pools of Adult Blood Plasma in Certain Infectious Diseases, Ann. Int. Med. **26**: 353 (March) 1947.

4. Minot, G. R., and Taylor, F. H. L.: Hemophilia: The Clinical Use of Antihemophilic Globulin, Ann. Int. Med. **26**: 363 (March) 1947.

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spread on or impregnated into sterile gauze, fibrin foams or absorbable cellulose and applied with pressure to the bleeding point. A thrombin preparation has been made by Parfentjev from rabbit plasma by salting out procedures not requiring activation with thromboplastin. Pohle and Taylor [5] prepared a similar product from the plasma of swine, steers and human beings, which, according to the authors, is an extremely potent hemostatic agent.

Normal human serum albumin was primarily developed in response to an urgent request from the armed forces as a blood substitute for use in traumatic shock. Because its chemical properties make possible its distribution in a stable, concentrated solution, it is compact to transport and convenient to use. Experience during the war has demonstrated that optimal treatment of traumatic shock requires the use of whole blood to avoid the anemia which develops if plasma or albumin is administered for replacement. Serum albumin is useful for emergency supportive therapy. In hypoproteinemic edema concentrated low salt albumin furnishes exactly the combination of properties needed for rational therapy. In cirrhosis of the liver, intravenous albumin in doses of 25 to 50 Gm. daily in addition to an adequate diet will raise the serum albumin level to normal in one to two weeks. This change in serum proteins, according to Janeway,[6] is associated with an increase in sense of well being, disappearance of peripheral edema and some diminution of ascites.

PECULIARITIES OF THE CIRCULATION IN THE KIDNEYS AND LIVER

The kidneys, most marvelous anatomic structures in the body in Dock's [1] opinion, work best while we sleep. Under such basal conditions their blood flow and work of excretion are maximal. When the body is violently active or under stress imposed by shock or hemorrhage, excretion and blood flow fall to extremely low levels.[2] This paradoxical behavior was a remarkable discovery made by means of modern technics for measuring blood flow.

The extra oxygen consumed by the kidneys when the diet is changed from low protein to high protein is too small to be detected, and yet this change in diet leads to hypertrophy of the kidneys. In some types of renal injury the kidneys may be seriously jeopardized by a diet which supplies both urea and aromatic acids. The kidneys secrete aromatic acids five times as effectively as they filter off and concentrate urea.[3] It may be that aromatic acids stimulate hypertrophy and the increase in blood flow noted at the onset of hypertrophy. The blood flow, which is many times greater than necessary to supply the oxygen requirements of the kidneys, varies with the need to excrete deleterious substances. Infinitesimal amounts of fever producing substances, for example, evoke maximal renal flow.

Studies on shock have thrown new light on renal hypertension. A decrease in blood flow due to shock or to a clamp on the renal artery leads to remarkable events,[4] the most surprising of which is a decrease in renal metabolism and oxygen use roughly proportional to the decrease in blood flow. Thus, Dock points out, the kidneys not only work while we sleep but they sleep when we are struggling to maintain life. When the blood flow is first arrested and later released, the vascular bed of the kidney does not widely dilate as it does in other viscera. This inhibition of renal metabolism protects the kidney even from many hours of ischemia, whereas other organs are seriously damaged by shorter periods of arterial block. A few minutes of ischemia will practically destroy the brain.

Renal vasoconstriction occurs after hemorrhage, heart failure, when we suffer pain, fear or anxiety, and even when the erect posture is assumed, thus decreasing the cardiac output. Shock apparently leads to the release in the kidney of an inhibitor of renal metabolism that also causes vasoconstriction. The mechanism for reducing renal metabolism and causing renal vasoconstriction is set in play by lowering the renal arterial pressure or by raising the interstitial pressure. This mechanism can be set off, Dock believes, only by a sensitive structure in the vascular bed of the kidneys. It has been suggested [5] that the renal pressor mechanism is related to peculiar cells in the afferent arteriole of each glomerulus and the plaque of closely crowded epithelial cells in the distal convolution at the point where it touches the glomerular hilus. This structure shows mitotic figures, unusual cytoplasmic granules and hypertrophy in animals subjected to acute renal ischemia. Such peculiar tissue has been found to be hypertrophied in men who have been in shock for several days before death. Photomicrographs of such changes are on file at the Army Medical Museum. In the process of evolution this mechanism apparently was provided in relation to shock and hemorrhage, which are common hazards of all mammals living under natural conditions.

5. Pohle, F. J., and Taylor, F. H. L.: The Use of a Globulin Substance Derived from Beef Plasma as a Local Hemostatic in Hemophilia, J. Clin. Investigation **17**: 667 (Sept.) 1938.

6. Janeway, C. A.: Other Uses of Plasma Fractions, with Particular Reference to Serum Albumin, Ann. Int. Med. **26**: 368 (March) 1947.

1. Dock, William: The Shattuck Lecture: The Clinical Significance of Some Peculiarities of the Circulation in the Kidneys, Liver, Lungs and Heart, New England J. Med., May 22, 1947.

2. Phillips, R. A.; Dole, V. P.; Hamilton, P. B.; Kendall, E., Jr.; Archibald, R. M., and Van Slyke, D. D.: Effects of Acute Hemorrhagic and Traumatic Shock on Renal Functions of Dogs, Am. J. Physiol. **145**: 314, 1946.

3. Smith, H. W.: Physiology of Renal Circulation, Harvey Lectures **35**: 166, 1940.

4. Dole, V. P.; Emerson, K., Jr.; Phillips, R. A.; Hamilton, P. B., and Van Slyke, D. D.: Renal Extraction of Oxygen in Experimental Shock, Am. J. Physiol. **145**: 337, 1946. Selkurt, E. E.: Renal Blood Flow and Renal Clearance During Hemorrhagic Shock, Am. J. Physiol. **145**: 699, 1946.

5. Goormaghtigh, N.: Existence of Endocrine Gland in Media of Renal Arteries, Proc. Soc. Exper. Biol. & Med. **42**: 688, 1939.

In contrast to the kidney, the liver is one of the simplest glandular structures. Its oxygen uptake is determined by its metabolic activity. The rise in total metabolism after a meal of high protein content is due almost entirely to intense hepatic activity. Clinicians therefore might reason that a high protein diet would retard the recovery of a diseased liver by increasing its metabolic activity; experience shows however that a high protein diet is beneficial in hepatitis and cirrhosis, even though it makes the liver work harder.

As is well known, the blood flow to the liver comes from two sources—the portal vein and the hepatic artery. The portal flow may be diverted wholly into the inferior vena cava without damage to the liver; and, in dogs, ligation of the hepatic artery causes no apparent damage. Such ligation may have serious effects however on a patient with chronic biliary tract disease. Cirrhosis provides the chief interest in the vascular bed of the liver. While anatomic studies indicate that the arterioles and the portal venules enter the sinuses of the liver lobule separately, the rate of perfusion through the normal portal vein drops a third when pressure in the hepatic artery is raised from 0 to 100 mm. during a double perfusion with oil with portal pressure at 20 mm. In alcoholic cirrhosis the portal blood flow was found to fall 78 per cent when blood flow at 100 mm. pressure was established in the hepatic artery. Perfusion studies made by Dock were interpreted as confirming Herrick's [6] report of greatly increased hepatic arterial inflow in some types of cirrhosis. This is believed to be due to the development of numerous minute arteriovenous fistulas analogous to the spider angiomas in the skin.

6. Herrick, F. C.: Experimental Study into Cause of Increased Portal Pressure in Portal Cirrhosis, J. Exper. Med. **9**: 93, 1907.

Current Comment

GOITER PREVENTION

McClendon and Hathaway [1] demonstrated in analyses made in 1924 that the iodine content of the food in the nongoitrous regions may be 100 per cent higher than that in the goitrous regions. They calculated from the quantity of iodine in the normal thyroid gland and the rate at which a person may drink water that in goitrous regions the iodine should be added up to 1,000 parts per hundred billion or 1 part per hundred million. This can be accomplished by adding 45 Gm. of sodium iodide per million gallons of water. Beaumont and Karns were able to increase the iodine content of turnips by the application of potassium iodide to the soil. The iodide treated plants contained 441 and 950 parts per billion of iodine in the roots and tops respectively, against 165 and 441 parts in chloride treated plots. Whether or not these quantities of iodine in food have therapeutic value has been partly answered by the experiments of Hunziker in Switzerland. Hunziker added potassium iodide to the fertilizer used for the garden from which his family was supplied with such vegetables as spinach, rhubarb, cabbage, lettuce and beans. The iodized vegetables were served to his 5 children ranging in age from 3 to 8 years. As a control 5 children from another family were supplied with vegetables which were raised on soil that was not iodized. Hunziker's graphs of the measurements of the circumference of the neck in the thyroid region show the beneficial influence of the iodized vegetables on the growth of the thyroid gland. Zwick [2] called attention in 1933 to the fact that the administration of even such minute quantities of iodine as are needed for goiter prophylaxis may be followed in some instances by a follicular eruption of pustular character. These cutaneous lesions must be differentiated from the juvenile form of acne, which they resemble. Iodide acne seems to occur more frequently since our drinking water is chlorinated, a circumstance which Zwick explains by the fact that all halogens act as follicular irritants. The possibility of a follicular eruption does not constitute per se a contraindication to attempts at goiter prevention by means of adding iodine to the water supply or to the soil in which vegetables are raised.

1. McClendon, J. F., and Hathaway, J. C.: Inverse Relation Between Iodine in Food and Drink and Goiter, Simple and Exophthalmic, J. A. M. A. **82**: 1668 (May 24) 1924.
2. Zwick, K. G.: Goiter Prevention with Food Plants Grown on Iodized Soil, Science **77**: 627 (June 30) 1933.

STABILITY OF PROTHROMBIN

The current belief that prothrombin disappears rapidly from blood or plasma stored at low temperatures is based on numerous chemical analyses by the generally used one stage method. In this method the time required for clotting after the addition of a large amount of thromboplastin is taken as a measure of prothrombin concentration. Studies based on the use of the more elaborate two stage method of analysis show, in contrast, that prothrombin disappears relatively slowly from stored blood. The latter procedure has been shown to be the more reliable by Ware, Guest and Seegers [1] by actual isolation of the amount of prothrombin indicated in the analysis. Unreliable values for prothrombin obtained by the one stop method of analysis may be attributed to the interfering action of a substance, recently reported to be present in plasma,[2] which accelerates the rate of activation of prothrombin to thrombin by thromboplastin and calcium ions. Crude preparations of this substance have been obtained by chemical fractionation, but the chemical structure is not yet known. Another new factor reported to be present in plasma by these same investigators has been shown to protect prothrombin. Purified prothrombin is unstable at room temperature, whereas the prothrombin in plasma is comparatively stable. Also purified prothrombin is stabilized when it is dissolved in plasma. Progress is steadily being made in preparing in pure form the many substances required for normal blood clotting and in reproducing the clotting reaction in the test tube under strictly controlled conditions.

1. Ware, A. G.; Guest, M. M., and Seegers, W. H.: Am. J. Physiol. **150**: 58 (July) 1947.
2. Ware, A. G.; Guest, M. M., and Seegers, W. H.: J. Biol. Chem. **169**: 231 (June) 1947.

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ORGANIZATION SECTION

Bureau of Information

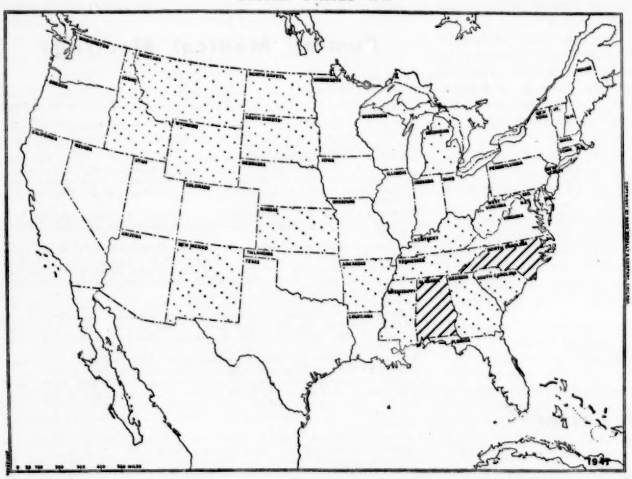
LOCATION OF PHYSICIANS

Virginia Shuler
Chicago

This is the tenth and last of a series of charts showing the trend in locations of physicians from April 1946 to January 1947.

After all the doctors have returned from the service and have established their practices, many areas still will be lacking in medical personnel, chiefly because these communities are financially unable to support a doctor or have inadequate hospital facilities. One of the ten points of the American Medical Association's program for extending to all people in all communities the best possible medical care recognizes federal aid to states where definite need is demonstrated to be administered by the proper local agencies of the states involved, with the help and advice of the medical profession. With this in mind, the Hill-Burton hospital survey and construction program was favored by the Association especially for its effect on rural practice. It is most important that these hospitals and health centers maintain at all times high medical standards. In order to attract physicians into areas where they are needed, physicians must have reasonable assurance of economic security, satisfactory medical facilities and an opportunity to practice medicine at its best.

UNITED STATES—1947



Population, based on 1943 estimated Census figures, per physician (excludes retired and not in practice) by state.
Key: Physician-population ratio by state: plain area 1-999, dotted area 1,000-1,499, striped area 1,500-2,999, checked area 3,000 and over.

The Hospital Survey and Construction Program

Last summer Congress passed the Hospital Survey and Construction Act. This legislation has two broad purposes: first, to help the states find out what their hospital facilities are and, second, to help build new hospitals or additions where they are needed most. To accomplish this twofold aim, the act authorizes $3,000,000 in federal funds to assist with the survey and planning and $75,000,000 a year for the next five years to assist with construction.

Probably the most forward looking feature of this legislation is its requirement that the states survey their existing facilities and plan construction where the need is greatest. Obviously, the most urgent need is in our rural sections, and for this reason priority is being given to those areas. However, there are limitations to this program which will affect rural communities the most. The first is the requirement that, for every dollar of federal funds spent on hospital construction, the community itself must put up two dollars. The second is the matter of maintenance and operation; no federal funds are provided for this purpose. Hospitals are complex institutions, expensive to build and maintain, and, if rural communities are to realize the benefits of this legislation, many of them will need additional help.

Five states have already recognized this situation and have passed laws authorizing state funds to aid local communities in hospital construction. Two states have gone a step further by appropriating money to help with the maintenance once the hospitals are built. Other states are considering similar legislation.

In the year since the passage of the hospital act great progress has been made. All states and territories have started, and some have completed, their surveys. By June 30 three states had submitted their state plans, and reports indicated that nearly all the states would have theirs ready by the end of this year. So that construction can start immediately, Congress authorized an arrangement which makes $75,000,000 available for hospital building during the year ending June 30, 1948. These funds may be used not only for hospitals but for health centers, laboratories, clinics and other medical facilities.

VANE M. HOGE, M.D., Medical Director;
Chief, Division of Hospital Facilities,
U. S. Public Health Service.

Medical Service Program

To develop the Ten Point Program of the American Medical Association the Council on Medical Service believes that any program for the medical care of the American people must be built from the bottom up—and not be imposed from the top down. Hence the importance of this state by state study is obvious. Of major importance in this program was the nationwide development of voluntary prepayment medical care plans. This voluntary program has now spread to thirty-six states and the District of Columbia. All but one of the remaining states are seriously working on a prepayment program. Enrolment

in these plans is steadily growing, and special attention is now being directed toward the rural areas.

Thirty-seven of sixty-one medical society plans have started a rural enrolment program. Twenty-one of these plans have enrolled 385,922 persons from these areas. Enrolment figures are steadily increasing, as also is the number of plans undertaking enrolment in rural areas.

Assistance is extended to farm groups and to others in rural areas not associated with groups for enrolment on a community basis. Local health councils with representation from professional societies and from civic, farm and industrial groups are preparing to spearhead the further development of voluntary prepayment medical care plans.

The Council on Medical Service has just completed a special brochure on "Medical Care Prepayment Plan Development Through a Local Health Council," which will be ready for distribution soon. This outlines a plan for organization, lists the functions for a local health council and suggests ways to obtain enrolment in rural areas. This local activity with medical society guidance is progressively building toward better medical care for all people.

To get action from the profession on the Ten Point Program, regional conferences have been held by the Council throughout the country and many state and county medical societies have inaugurated programs of their own or have taken the Ten Point Program and adapted it to their own local needs. To date these conferences have consisted largely of discussion by key physicians. A new development in this will mark the regional conference of the Southeastern states to be held in Atlanta, Ga., in October to consider "Health Problems of the South." Leaders in farm, educational and industrial life of the South, as well as physicians, will be on the program.

The problem of medical service is not static. It is complex. It demands cooperation. As soon as progress is made in one segment of the problem, other problems will arise, for medical progress brings medical problems.

Under the leadership of American medicine much is being done to solve these problems. Rural health conferences are being held, health councils formed, studies being made in child health, in old age. From all angles surveys are projected. American medicine is attacking these problems—no matter how difficult—wholeheartedly, efficiently, tirelessly and often successfully.

THOMAS A. HENDRICKS, Secretary,
Council on Medical Service,
American Medical Association.

Washington Letter

(From a Special Correspondent)

Sept. 3, 1947.

Committee to Coordinate Government Research

A report by Presidential Assistant John R. Steelman as chairman of the President's Scientific Research Board advocated an expenditure of two billion dollars a year on scientific research by 1957. Commenting on it, President Truman announced that he would shortly name a federal committee to aid coordination of government research programs. The report advocated formation of a National Science Foundation, although Mr. Truman had vetoed the bill passed by Congress last session creating such a foundation on the ground that it centered too much authority in a part time committee of scientists. Mr. Steelman's report also urged heavier emphasis on basic research and medical research and recommended that military research be continued at a high level for the next five years. Other proposals: a federal program of assistance to undergraduate and graduate students in science as part of an overall national scholarship and fellowship program to deal with scientific manpower shortages; federal assistance to universities and colleges in laboratory facilities and scientific assistance; assistance to European laboratories as part of a program of peaceful aid. The report stated that the Soviet Union's 1947 budget provides $1,200,000,000 for research and development, and Russia has adopted a five year program to produce 140,000 engineers and scientists each year. The report blamed England's lag in technological developments for upsetting the balance of power in Europe, causing two world wars. Discontinuance of a flow of scientific information from other countries, because "Europe's laboratories are still blacked out," was described by Mr. Truman as "an emergency and a challenge."

Ask Investigation of Veterans Administration Program

Louis E. Starr, Veterans of Foreign Wars commander, urged an immediate joint study by a congressional committee and a group of war veterans of the Veterans Administration hospital building program, which he said was "hopelessly adrift." He urged that the study be ready for consideration by Congress when the next session opens in January. He charged that the VA hospital waiting list contains 19,000 names and claimed that the program to establish 150,000 hospital beds by 1948 is two years behind schedule.

President Requests Job Assistance for the Physically Handicapped

Federal, state and local officials have been asked by President Truman to cooperate in a program aimed at finding jobs for physically handicapped persons. The request was made during signing of the proclamation designating October 5 to 11 as "National Employ the Physically Handicapped Week."

Coming Medical Meetings

American Academy of Neurological Surgery, Colorado Springs, Broadmoor Hotel, Oct. 9-11. Dr. T. C. Erickson, 1300 University Ave., Madison 5, Wis., Secretary.
American Academy of Ophthalmology and Otolaryngology, Chicago, Palmer House, Oct. 12-17. Dr. W. L. Benedict, 102 Second Ave. S.W., Rochester, Minn., Secretary.
American Anti-Arthritis Association, Del Mar, Calif., Oct. 4-5. Dr. Robert T. Pottenger, 65 N. Madison Ave., Pasadena, Calif., Secretary.
American Association of Medical Record Librarians, New York, Hotel Commodore, Sept. 7-12. Mrs. Adaline Hayden, 18 E. Division St., Chicago, Executive Secretary.
American Clinical and Climatological Association, Colorado Springs, Oct. 13-15. Dr. James Bordley III, Johns Hopkins Hospital, Baltimore 5, Secretary.
American College of Surgeons, New York, Waldorf-Astoria Hotel, Sept. 8-12. Dr. Paul B. Magnuson, 40 E. Erie St., Chicago 11, Secretary.
American Congress on Obstetrics and Gynecology, St. Louis, Municipal Auditorium, Sept. 8-12. Mr. Karl S. Richardson, 24 West Ohio St., Chicago, Business Manager.
American Hospital Association, St. Louis, Sept. 22-25. Mr. George P. Bugbee, 18 E. Division St., Chicago, Exec. Secretary.
American Public Health Association, Atlantic City, Oct. 6-10. Dr. Reginald M. Atwater, 1790 Broadway, New York 19, Executive Secretary.
American Roentgen Ray Society, Atlantic City, Sept. 16-19. Dr. H. Dabney Kerr, University Hospitals, Iowa City, Secretary.
Central Neuropsychiatric Association, Galveston, Texas, Oct. 17-18. Dr. William C. Menninger, 3617 W. Sixth Ave., Topeka, Kans., Secretary.
Colorado State Medical Society, Denver, Shirley-Savoy Hotel, Sept. 17-20. Mr. Harvey T. Sethman, 1612 Tremont Place, Denver 2, Executive Secretary.
Connecticut Clinical Congress, New Haven, Sept. 16-18. Dr. Francis G. Blake, 258 Church St., New Haven, Chairman.
Delaware, Medical Society of, Wilmington, Oct. 13-15. Dr. John F. Hynes, Memorial Hospital, Wilmington, Secretary.
District of Columbia, Medical Society of the, Washington, Oct. 6-8. Mr. Theodore Wiprud, 1718 M Street N.W., Washington 6, Secretary.
International College of Surgeons, U. S. Chapter, Chicago, Palmer House, Sept. 29-Oct. 2. Dr. Louis J. Gariepy, 16401 Grand River Ave., Detroit 27, Secretary.
Inter-State Postgraduate Medical Association of North America, St. Louis, Public Auditorium, Oct. 14-17. Dr. Tom B. Throckmorton, 406 Sixth Ave., Des Moines, Iowa, Secretary.
Kentucky State Medical Association, Louisville, Sept. 29-Oct. 2. Dr. P. E. Blackerby, 620 S. Third St., Louisville 2, Secretary.
Michigan State Medical Society, Grand Rapids, Pantlind Hotel, Sept. 23-26. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing 8, Secretary.
Mississippi Valley Conference on Tuberculosis, Chicago, Edgewater Beach Hotel, Sept. 8-10. Mr. Donald E. Pratt, 411 W. Tenth St., St. Louis 1, Secretary.
Mississippi Valley Medical Society, Burlington, Iowa, Oct. 1-3. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
Pennsylvania, Medical Society of the State of, Pittsburgh, Hotel William Penn, Sept. 15-18. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh 22, Secretary.
Southern Psychiatric Association, Birmingham, Ala., Oct. 13-14. Dr. Newdigate M. Owensby, 384 Peachtree St. N.E., Atlanta, Ga., Secretary.
Utah State Medical Association, Salt Lake City, Sept. 11-13. Dr. Ray T. Woolsey, 316 Atlas Bldg., Salt Lake City 1, Secretary.
Vermont State Medical Society, Burlington, Hotel Vermont, Oct. 1-3. Dr. Theodore H. Harwood, 128 Merchants Row, Rutland, Secretary.
Virginia, Medical Society of, Roanoke, Oct. 13-15. Miss Agnes V. Edwards, 1200 E. Clay St., Richmond 19, Secretary.
Washington State Medical Association, Seattle, Olympic Hotel, Sept. 28-Oct. 1. Dr. Harold E. Nichols, 327 Cobb Building, Seattle, Secretary.
Wisconsin, State Medical Society of, Milwaukee, Oct. 6-8. Mr. Charles H. Crownhart, 110 E. Main St., Madison 3, Secretary.
World Medical Association, Paris, France, Sept. 17-20. Dr. Charles Hill, B. M. A. House, Tavistock Sq., London, W. C. 1, England, and Dr. P. Cibrie, 60 boulevard de Latour-Maubourg, Paris 7e, France, Joint Secretaries

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GOVERNMENT SERVICES

VETERANS ADMINISTRATION

RESIDENCY TRAINING

The Veterans Administration is making every effort to encourage doctors who complete residency training in one of its hospitals to accept full time probational appointments in its department of medicine and surgery, Dr. Paul R. Hawley, chief medical director, said August 18. On the satisfactory completion of three years' probational work, appointments are made permanent. These doctors will be placed, if possible, in positions where they may practice their specialties and best serve ill and disabled veterans, Dr. Hawley added.

The Veterans Administration offers the guidance of certified specialists to doctors who will serve in Veterans Administration hospitals both during and after completion of residency training. Guidance in the field of psychiatry also is offered in mental hygiene clinics where the chief of clinic has not been certified by the American Board of Neurology and Psychiatry, provided the chief is a capable specialist. In many fields, such as dermatology, ophthalmology and otolaryngology, guidance might also be received by doctors at regional offices. The Veterans Administration has training programs under way in 62 of its 124 hospitals, with 1,770 residents studying for their specialty boards. This training program is a vital source for the recruitment of permanent doctors for the department of medicine and surgery and is an important feature of the program to provide eligible veterans with medical care "second to none."

FIFTEEN NEW VETERANS' HOSPITALS

The War Department announces that the army chief of engineers expects to advertise for bids for the construction of fifteen new Veterans Administration general hospitals, some of them within forty-five days, for which the working drawings have been completed. These hospitals will be located at:

Beckley, W. Va. Clarksburg, W. Va. Grand Island, Neb. Poplar Bluff, Mo. Fort Wayne, Ind. Erie, Pa. Altoona, Pa.	200 beds each
Newark, N. J.	1,000 beds
Little Rock, Ark. Omaha	500 beds each
Wilkes-Barre, Pa.	475 beds
Shreveport, La.	450 beds
Wilmington, Del.	300 beds
Iron Mountain, Mich. Big Spring, Texas	250 beds each

Of the other forty-nine hospitals included in the program undertaken by the army engineers for the Veterans Administration, the preliminary plans are at a stage where their revision can be made with a minimum of loss of time and effort. The engineers plan to slash about $100,000,000 off the present designs in accordance with the statement by General Bradley that present day prices make it necessary to modify the designs or obtain a large amount of additional building funds.

COMPENSATION PAYMENTS TO VETERANS WITH TUBERCULOSIS

The Veterans Administration will extend compensation payments to veterans who have been discharged from VA hospitals with arrested pulmonary tuberculosis but who need more time at home in which to recover sufficiently to take a job without endangering their health. The new plan announced by the Veterans Administration permits payment to such veterans on a totally disabled basis up to two years from date of discharge from any VA hospital while they remain under close medical supervision. Previously these payments were reduced by 50 per cent within six months of the veteran's discharge from the hospital. Now these veterans will be examined every six months and, if examination shows they are unable to resume employment, physicians will certify their findings so that the VA may determine whether to continue full compensation payments for an additional six months. This plan is expected to result in better control of arrested pulmonary tuberculosis among veterans and so reduce the necessity of hospitalizing them again. Many prominent tuberculosis specialists have advocated this action, it is said, and characterize it as one of the most promising advances in the care of tuberculosis by the Veterans Administration.

INCREASED ALLOWANCE TO VETERAN STUDENTS

A law passed by the last session of Congress provides for automatic increases effective September 1 in the minimum allowances received by the more seriously disabled veterans enrolled in educational and training courses under government sponsorship. The law provides that a veteran enrolled in a course under the Vocational Rehabilitation Act (Public Law 16) whose disability is 30 per cent or higher will receive $115 a month if he has no dependents, and $135 if he has one dependent. The old law allowed $105 and $115 respectively for the same two categories, and the lower figures will continue to apply to veterans with disabilities of less than 30 per cent. The new law also increases the allowance for additional dependents of veterans with disabilities of 30 per cent or more, the additional allowance for one child being increased from $10 to $20 a month, and the previous allowance of $7 a month for each additional child being increased to $15.

AIR CONDITIONED HOSPITAL AT FRESNO, CALIF.

The contract for $5,645,700 for the construction of the Veterans Administration Hospital at Fresno, Calif., which has been awarded, is the first contract made under the procedure developed by General Bradley, administrator of veterans affairs, and Lieut. Gen. Wheeler, army chief of engineers, calling for a revision of designs to meet a smaller budget. This 250 bed general hospital will be the only air conditioned one in the program undertaken by the army corps of engineers for the Veterans Administration.

LAUNDRY EQUIPMENT FOR HOSPITALS

The Army Corps of Engineers has awarded a contract for $3,286,067 for laundry equipment for sixty-one Veterans Administration hospitals. The equipment includes washing machines, drying tumblers, press units, extractors, marking machines and all other units that go to make a first class laundry.

PENSIONS FOR VETERANS OF CIVIL AND SPANISH-AMERICAN WARS

The Veterans Administration will pay a 20 per cent increase in non-service connected pensions for veterans of the Civil and Spanish-American wars and in death compensation to their dependents, effective in September. Some 113,000 veterans and 95,000 dependents of deceased veterans will benefit by the new law. It is estimated that the increase will total about $29,000,000 for the first year and that the cost will decline rapidly thereafter. Previously, payments ranged from less than $15 a month to $100 a month.

TESTS TO IMMOBILIZE BACTERIA IN HOSPITALS

The Veterans Administration is conducting an intensive pilot test in a New England hospital with an oil emulsion designed to immobilize bacteria in tuberculosis wards and hospitals. Blankets, linens and floors have been treated with a highly refined oil in order to trap settling bacteria and prevent their recirculation by air currents within the patients' rooms. Methods are also being studied to kill the trapped bacteria by means of chemicals or drugs. As yet the results of adding various compounds to the oil for this purpose have been disappointing. The purpose of the experiments is to reduce further the danger of Veterans Administration employees contracting tuberculosis and transmitting it to others.

THE AURAL REHABILITATION PROGRAM

About 30,000 World War II veterans with service connected hearing impairments will be eligible for the recently established rehabilitation program. Two Veterans Administration and two naval hospitals have been designated as centers where fenestration operations may be performed on veterans who stand a chance of regaining some degree of hearing through treatment. The Veterans Administration hospitals are in Los Angeles and San Francisco, and the naval hospitals are in Bethesda, Md., and Philadelphia.

HOSPITAL NEWS

Bids are being accepted by the Veterans Administration for the construction of a 564 bed neuropsychiatric addition to the hospital at Lebanon, Pa. This hospital now has 212 beds for medical and surgical cases and 265 beds for neuropsychiatric patients.

The Danville, Ill., Y. M. C. A. is cooperating with the Veterans Administration hospital in that city by offering its gymnasium facilities to patients able to take part in athletics.

A patient in the Veterans Administration hospital at Memphis, Tenn., paralyzed from the waist down coached employee basketball teams from a wheel chair, and the men's team won twelve out of the fifteen games.

The Veterans Administration in the Dallas, Texas, area has obtained more than two hundred bicycles from army surplus stocks for patients who have their physician's permission to ride them.

RESIDENCY TRAINING IN TUBERCULOSIS

For the first time the Veterans Administration is offering physicians residency type training in tuberculosis. This training will be available at VA hospitals at Alexandria, La., Excelsior Springs, Mo., Brecksville, Ohio, Oteen, N. C., and McKinney, Texas. Physicians serving in these residencies may earn credit toward the examinations of the American Board of Internal Medicine and its subspecialty board for pulmonary diseases.

PERSONAL

Dr. J. B. Floyd has resigned as director of the tuberculosis prevention work with the Kentucky State Health Service and has accepted a position as chief medical officer for Eastern Kentucky for the Veterans Administration, with headquarters at Lexington.

Dr. Walter B. Brown has been appointed clinical director of the Veterans Administration hospital at San Fernando, Calif. He is a graduate of Rush Medical College, Chicago, a veteran of World War II and formerly was chief of tuberculosis at the Veterans Administration hospital, Livermore, Calif.

Dr. James J. Raleigh has been assigned to the staff of the veterans' hospital at Sunmount, N. Y. Dr. Raleigh formerly was connected with the Berthold S. Pollak Hospital for Chest Diseases, Jersey City, N. J.

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PUBLIC HEALTH SERVICE

EUROPEAN ARRIVALS MUST BE VACCINATED

Persons arriving from Europe are now required to present a certificate showing that they have been successfully vaccinated against smallpox within the last three years or show physical evidence that they have had smallpox, the U. S. Public Health Service has announced. Travelers who cannot prove immunity to smallpox must either consent to an immediate vaccination or remain under observation of quarantine officials until the incubation period for the disease is past. This period will not exceed fourteen days after arrival. Increased air travel, which results in travelers reaching the United States before outbreaks of smallpox in foreign countries can be reported to quarantine officials, necessitated the new immunization requirement. As a further protection, arrangements are being made with the transportation industry to refuse to sell tickets to persons who cannot show proof of smallpox immunity.

AWARDS AND COMMENDATIONS

Dr. Thomas Parran Jr.

The United States of America Typhus Commission Medal has been awarded to Dr. Thomas Parran Jr., Surgeon General, U. S. Public Health Service, who, according to the citation, rendered exceptionally meritorious service in connection with the work of the United States of America Typhus Commission during the period July 1942 to June 30, 1946. Through his wisdom, special knowledge, advice and influence, he contributed to the commission's investigations and control of typhus fever in the United States and in theaters of operation overseas. World renowned leader in public health, Dr. Parran has inspired and helped to create a new era in worldwide typhus control. Dr. Parran graduated from Georgetown University School of Medicine, Washington, D. C., in 1915 and entered the military service March 26, 1917.

MISCELLANEOUS

SALE OF SURPLUS GOVERNMENT PROPERTY

The War Assets Administration is conducting sales of surplus government property, in purchasing which physicians who are veterans have certain priorities. Items in a sale at the Army Base, Boston 10, are crutches, stretchers, beds, oxygen purifiers, electric oven or incubator, microscopic lamps and hand splints. The sale closes September 22. The Denver Regional Office, 728 15th Street, Denver 2, of the War Assets Administration is conducting a sale, beginning September 18, of various kinds of sterilizers, including those used for surgical instruments, dressings, utensils, hypodermic needles and water. Physicians who are veterans have certain priorities in these sales. Orders received after September 17 will be filled without regard to priorities. In this continuous fixed price sale, a deposit of at least 10 per cent of the total price offered must accompany all orders; $25 is the smallest deposit acceptable.

PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Alabama

Ashurst, Robert T. III.....Montgomery
Berry, James D.....Fayette
Denton, Robert O.....Onconta
Hill, Luther L.....Montgomery
Majors, Webster B.....Birmingham
Marshall, Samuel P.....Marion
Tippins, Henry K. Jr.....Geneva

Arkansas

Branch, James W.....Hope
Cullins, John G.....Little Rock
Hart, James C. Jr.....Pine Bluff
Longstreth, Alvin E.....Little Rock
Murphy, Garland D.....Eldorado
Powers, Stephen A.....Jonesboro
Scott, Jesse F.....Little Rock

California

Christensen, Lloyd F.....Hanford
Crosby, Robert C.....Huntington Park
Doane, Edwin A.....Pasadena
Dugan, Roger J.....Los Angeles
Dunn, Robert H.....Los Angeles
Dyar, Robert.....Stockton
Edgar, Archie L.....San Francisco
Eldridge, David G.....Vallejo
Elston, Martin P.....Brentwood
Fleming, Forest E.....Los Angeles
Fong, David.....Berkeley
Fricker, Geoffrey A.....Hemet
Fritschi, Ulrich A.....San Francisco
Gray, Richard.....San Francisco
Gwartney, Richard H.....Los Angeles
Hansen, Robert H.....San Francisco
Harrington, Robert W.....Simi
Hart, Ward L.....San Francisco
Heavey, John T.....Gustine
Jensen, Garver L.....San Leandro
Leavy, William A.....San Diego
Le Van, Paul.....Los Angeles
Levin, Walter N.....Avenal
Morris, Francis B. O.....Los Angeles
Mross, George A.....Brawley
Nunez, Gilbert M.....Los Angeles
Parmley, Clifford E.....Long Beach
Reed, Joseph A.....Pasadena
Sargeant, Donald J.....Los Angeles
Schneider, Gordon F.....Oceon Beach
Seidman, Julius.....Los Angeles
Smith, Vard L.....Santa Monica
Solnit, Albert J.....I os Angeles
Stoft, Josef O.....Glendale
Tesauro, Nicholas.....San Francisco
Weinstein, Harry.....San Francisco

Colorado

Ashmun, Raymond V.....Denver
Close, Harland T.....Buena Vista
Clutter, Joseph S.....Pueblo
Dyde, James F.....Boulder
Kurland, Anthony M.....Denver
Wigton, John R.....Pueblo

Connecticut

Burns, Cornelius J.....Danbury
Caplan, Henry.....Meriden
Comfort, Charles W. Jr.....New Haven
Duennebier, Harold W.....Hartford
Gerson, Martin J.....Newton
McCarthy, James S.....New Haven
Mancall, Irwin T.....Hartford
Paine, Malcolm.....Westport
Penner, Sidney L.....Stratford
Spinelli, Nicholas P. R.....Stratford

District of Columbia

Ammerman, Harvey H.....Washington
Long, John A.....Washington
McMahon, Thomas F.....Washington
Miner, Sabin S.....Washington
Pole, Samuel B. III.....Washington

Florida

Alexander, James L.....Orlando
Dougherty, Hugh Robert.....Lake City
Cummings, Eugene H.....Archer
Ferran, Harry H.....Orlando
Kokomoor, Marvin L.....Gainesville
Myers, Wade C. Jr.....Tampa

Georgia

Cauble, George C. Jr.....Clarkdale
Coffee, Archie T. Jr.....Eastman
Crenshaw, Andrew H.....Martin
Dennison, David B.....Atlanta
Duncan, James L.....Bowdon Junction
Durden, John G. Jr.....Atlanta
Greer, Zack E.....Cordele
Harper, Jack T.....Augusta
Little, Alexander G. Jr.....Valdosta
Mulherin, Charles M.....Augusta
Murphy, Fred E. Jr.....Jesup
Parrish, Lewis H.....Wrens
Robinson, Joe S.....Rochelle
Rogers, James V. Jr.....Cairo
Stinson, Roy F. Jr.....Atlanta

Idaho

Bauman, James H.....Lewiston
Dalley, Arthur F.....Aberdeen

Illinois

Bayly, Melvyn A.....Chicago
Brooks, Jack E.....Chicago
Broz, Raymond W.....Berwyn
Cailleteau, Cicero G.....Chicago
DeRenne, William L.....Chicago
Dew, Walter A.....Belleville
Diggs, Charles H.....Chicago
Douglas, William T.....Hillsboro
Douglass, Bruce E.....Berwyn
Eisenstein, Averon H.....Chicago
Ekstrand, Richard W.....Waukegan
Ewan, William A.....Cuba
Fantl, Eric W.....Chicago
Farr, Milan W.....Chicago
Fiorito, Louis L.....Chicago
Goldberg, Abraham H.....Oak Forest
Harr, Rasmus J.....Chicago
Herrmann, Ross E.....Bradford
Hess, Robert A.....Wilmette
Hilkevitch, Aaron A.....Chicago
Houser, Deward S.....Chicago
Huston, John H.....Oak Park
Jakocko, Peter F.....Chicago
Kaiser, Jerome.....Chicago
Kaplan, Elliott A.....Chicago
Kleinschmidt, William H.....Chicago
Krol, Edward J.....Chicago
Lifchultz, Leo B.....Chicago
Lipson, Henry I.....Maywood
Lounsbury, Benjamin F.....Oak Park
McMahon, John A.....Chicago
Moser, Herman R.....Aurora
Newman, Bruce B.....Elmhurst
Pianowski, Thad W.....Chicago
Schotz, Seymour.....Chicago
Scott, William C.....Elkville
Sennott, John S.....Waterloo
Sherman, Thomas W.....Chicago
Smith, Robb V. S.....De Kalb
Trombly, Frank W.....Chicago
Tulsky, George.....Chicago
Weber, Eugene P.....Olney
Wedral, Jerry W.....Cicero
Weinstein, Roy C.....Chicago
Wilson, Henry M. Jr.....Peoria

Indiana

Barnett, William E.....Logansport
Bonaventura, Angelo P.....East Chicago
Cuthbert, Marvin P.....Indianapolis
Davis, James M.....Indianapolis
Ellis, Lyman H.....Lebanon
Farrell, Joseph T.....Indianapolis

Indiana—Continued

Ferreri, Raymond N.....Connersville
Goebel, Carl W.....Ft. Wayne
Herrold, George W.....Lafayette
Higgins, John R.....New Albany
Hippensteele, Ralph O.....Fremont
Kahn, Howard L.....Indianapolis
Lichtenberg, Melvin.....Indianapolis
Makovsky, Theodore.....Valparaiso
Martin, Harold R.....West Lafayette
Parker, George F.....Indianapolis
Schneider, Carl J.....Indianapolis
Shrader, Jack Courtney.....Indianapolis
Spray, Page E.....Frankfort
Van Dorn, Myron J.....Indianapolis

Iowa

Beckman, Charles W.....Iowa City
Doles, James W.....Knoxville
Elson, Veryl J.....Danbury
Huber, Robert H.....Charles City
Kehoe, Joseph L.....Wellman
Leserman, Lester K.....Rolfe
Mirick, Donald F.....Whittier
Wollmann, Walter W.....Newton

Kansas

Dougan, Archie F.....Kiowa
Eggleston, Donald E.....Kingman
Fitzgerald, Edward M.....Wichita
Kass, Irving.....Topeka
Morrison, Ira R.....Atchison
Mott, James M. Jr.....Lawrence

Kentucky

Ferguson, Silous C.....Middlesboro
Lewis, Blaine, Jr.....Louisville
Martin, Jesse J.....Tompkinsville
Powell, Lewis C.....Winchester
Queen, Rogers L. Jr.....Louisville
Riley, James M. Jr.....Maysville
Roach, Benjamin F.....Midway

Louisiana

Anderson, Augustus W.....Hammond
Bigalow, James F.....Baileyville
Claiborne, Martin D. Jr....New Orleans
Cummins, Harold V.....New Orleans
Klinger, Morris.....New Orleans
Leslie, James P.....Shreveport
Lindsey, Douglas.....Minden
Millsaps, Frederick F.....Monroe
Palfrey, William G.....Baton Rouge
Picard, Robert S.....Shreveport
Robinson, Charles R.....New Orleans
St. Raymond, Albert H. Jr..New Orleans
Tiblier, Sidney L. Jr.....New Orleans

Maine

Clement, James D. Jr.....Bangor
Houle, Marcel P.....Biddeford
Lown, Bernard.....Lewiston
Murphy, Norman B.....Augusta
Stitham, Linus J.....Mars Hill

Maryland

Allen, Oscar C.....Baltimore
Chiodi, Nathan E.....Baltimore
Crider, Franklin N.....Takoma Park
Dillon, Harold.....Baltimore
Foard, Wilbur H.....Street
Frerichs, John B.....Baltimore
Godlove, John C.....Hagerstown
Handelsman, Jacob C.....Baltimore
Helfrich, William G.....Baltimore
Himelfarb, Albert J.....Baltimore
Hirshman, Philip J.....Hagerstown
Lewis, Roger A.....Bethesda
Morrison, William H.....Baltimore
Nachlas, Marvin M.....Baltimore
Severn, Henry D.....Baltimore
Wanner, Jesse R. Jr.....Salisbury
Wells, John B.....Baltimore
Woodrum, Olin C.....Takoma Park

PHYSICIANS SEPARATED FROM SERVICE

Massachusetts

Butler, Carrol F.....Worcester
Casserly, George B.....North Andover
Ciani, Angelo W.....Cambridge
Dunn, Paul P.....Fall River
Generales, Cleomenes A.....Lowell
Grimes, Arthur J. Jr.....Gloucester
Harrington, Edward C.....Holyoke
Harvey, Norman A.....Holyoke
Heimberg, Felix.....Dorchester
Howard, Fred H.....Chicopee Falls
Hussey, Earle U.....Lynn
Kane, Charles A.....Roslindale
Magwood, Robert W.....Somerville
Mahony, Thomas H. Jr.....Boston
Martin, Clarence S....Arlington Heights
O'Connor, Paul J.....Worcester
Peloquin, Laval U.....Lowell
Regnier, Edme.....Salem
Reinisch, Max.....Holyoke
Sharpe, Myer.....Malden
Snyder, Philip F.....Lynn
Sullivan, John F.....Dorchester

Michigan

Asselin, David C.....Detroit
Bishop, Ronald C.....Almont
Burch, John E.....Wyandotte
Charleston, Roderick A.....Detroit
Deland, Clyde I.....Battle Creek
Drazek, Joseph A.....Detroit
Elovzin, Manning.....Detroit
Henderson, Allison B.....Detroit
Henderson, William W...Highland Park
Hinshaw, Warren V.....Onsted
Jones, Herbert A. Jr.....Wyandotte
Kelson, Malcoln J. Jr.....Detroit
Levin, Herbert G.....Detroit
Maxim, Edward S.....Detroit
Morton, David G.....Detroit
Rentenbach, Robert F.....Detroit
Scher, Joseph N.....Mt. Clemens
Schweigert, Clarence F.....Detroit
Seiferlein, Archibald L.....Detroit
Shelden, Warren E.....Detroit
Youngman, Douglas C....Highland Park

Minnesota

Adams, Neil D.....Rochester
Anderson, Arnold S. Jr.....Minneapolis
Bernstein, William G.....Stillwater
Brotchner, Leonard A.....St. Paul
Burns, Craig A.....Minneapolis
Emerson, Edwin E.....Proctor
Fee, John G.....Duluth
Gleason, Donald F.....Litchfield
Hartman, Seymour A.....Minneapolis
Karleen, Conrad I.....Tracy
Landa, Marshall.....Minneapolis
Leverenz, Carleton W.....St. Paul
Nelson, Paul R. Jr.....Virginia
O'Phelan, Harvey E.....St. Paul
Perry, John W.....St. Paul
Petit, Julien V.....Minneapolis
Preston, Lewis F.....Rochester
Rogin, Norton.....Minneapolis
Rushton, Joseph G.....Rochester
Russell, Paul L.....Minneapolis
Schrier, Harold L.....St. Cloud
Shapiro, Marvin J.....Minneapolis
Wallin, Ira O.....Two Harbors
Ward, Byron H.....Rochester
Wylie, Robert L.....St. Paul
Yaeger, John J.....Sanborn
Zarling, Virgil R.....Minneapolis

Mississippi

Hightower, Jesse R.....Itta Bena
Rogers, Joseph B.....New Albany

Missouri

Dreyer, William F.....Webster Groves
Graham, David T.....St. Louis
Levin, Abraham J.....St. Louis
McDowell, Allyn J.....St. Louis
Pierron, John B.....Kansas City

Missouri—Continued

Scott, John E.....Kansas City
Silvermintz, Saul D.....Clayton
Veninga, Frederick W.....St. Louis
Weinel, Francis G.....Webster Groves
Westcott, Robert J.....Knox City
Westsmith, Richard A.....St. Louis
Wise, Wilfred.....St. Louis
Wooldridge, Alexander G.....Butler

Nebraska

Bosley, Warren G.....Palisade
Campbell, Stuart D.....Omaha
Fleming, Edward F.....St. Paul
Hopkins, William J.....Omaha
Johnson, Cedric C.....Omaha
Luikart, Ralph H. Jr.....Omaha
O'Neil, James J.....Omaha
Petersen, Donald M.....Hampton
Stemper, Jack M.....Lincoln
Wiedman, John G.....Lincoln

New Hampshire

Page, Otto C. Jr.....Laconia

New Jersey

Berman, Carroll Z.....Passaic
Bologna, Camillo V.....Garfield
Camarda, Joseph J.....Plainfield
Carter, Ogden B. Jr.....West Orange
Crowley, Lawrence G.....East Orange
Davis, John F.....Bloomfield
DeLong, Edward E.....Lyons
Feeney, Edward J.....Newark
Fenichel, Murray F.....Newark
Foster, John T.....So. Orange
Freda, Franklin D.....Newark
Froelich, Jerome J.....Newark
Fuhrmann, John B.....Flemington
Gamon, Adam E. II.....Montclair
Hawkins, Robert C. II.....Glassboro
Hillman, Frederick C.....Paterson
Lilien, Bernard B.....Irvington
Mischle, Ellis J.....Jersey City
Morrill, James P.....Glen Rock
Mullowney, James P.....Marlton
Murray, Francis J.....Elizabeth
Osterberg, Eric R.....East Orange
Pietri, Jose F.....West End
Prall, Robert C.....Montclair
Ramundo, Michael R.....Clifton
Schwartz, Henry C.....Atco
Schwartz, Ralph A.....Newark
Shanik, Morton J.....Dover
Silk, Morton J.....Bayonne
Storer, Alexander Jr.....Pitman
Van Ness, Walter J.....Hawthorne
Warwick, Ralph A.....Camden
Wassell, Benjamin.....East Orange
Waugh, Bascom S.....Camden
Woolbert, Edwin S.....Pleasantville
Wunderlich, Howard O.....Union City
Zavertnik, Joseph J.....Englewood
Zheutlin, Bertram.....Jersey City

New Mexico

Syme, Oscar.....Albuquerque

New York

Benzier, Erwin E.....Flushing
Bisordi, Mario V.....Mount Vernon
Blakeslee, Robert N.....Windham
Bolin, Neatha V.....Bath
Bornstein, Siegbert.....Brooklyn
Boylan, John W.....Rochester
Brauer, Werner.....New York
Breckler, Irving A.....New Rochelle
Brown, Merton L.....New York
Caccamise, Charles W. Jr.....Rochester
Cacioppo, Leonard R.....Brooklyn
Carton, Charles A.....New York
Casey, Charles C.....Medina
Chamberlain, John M.....Cooperstown
Cobert, Amos.....New York
Cohen, Sidney M.....Brooklyn

New York—Continued

Colby, Raymond G.....Bronx
Cucolo, Gabriel F.....Brooklyn
De Feo, Edward.....Schenectady
Delbel, Nello V.....Plattsburg
De Marco, Michael.....New York
Dixon, George G.....Brooklyn
Donnelly, William L.....Brooklyn
Doyle, Henry W. Jr.....New York
Driscoll, Joseph C.....Schenectady
Du Bow, Emanuel.....New York
Dugan, David D.....Hamburg
Dutchen, William.....New York
Dwinelle, William H.....Tully
Eckart, Robt. E.....Great Neck
Essenson, Lawrence.....New York
Feldman, John L.....New York
Fletcher, Gilbert H.....New York
Forrest, Fred M.....St. Albans
Fox, John L.....Brooklyn
Fox, Max.....Brooklyn
Gee, Willis W.....Newburgh
Gonet, Jean E.....Rhinebeck
Gordon, Hirsch L.....Bronx
Grover, Donald S.....Syracuse
Haber, Sidney A.....Brooklyn
Hart, George G.....Lake Placid
Hassenfratz, Arthur C.....Buffalo
Hastings, Wade A.....Brushton
Heller, Morris F.....New York
Hempel, Herbert F.....Yonkers
Hermann, Henry L.....New York
Hoffman, Burton P.....Brooklyn
Johnson, Thomas H.....Yonkers
Kagan, Harold N.....Port Jervis
Larson, Albert L.....White Plains
Lass, Paul M.....New York
Latella, Peter.....Tuckahoe
Lawson, John W.....Yonkers
Levinson, Robert D.....Brooklyn
Levitin, Milton.....Brooklyn
Levy, Edwin M.....Canandaigua
Liebling, Walter.....Bronx
Luhr, Alfred F.....Buffalo
Michaels, Abraham J.....Brooklyn
Miller, George E. Jr.....Bath
Miner, Irving E.....Baldwin
Mitchell, Alexander C.....New York
Morris, Allston J. Jr.....New York
Mosco, James A.....Buffalo
Mueller, George C.....New York
Mueller, Helmut A....North Tonawanda
Mullins, Bernard L.....New York
Musicant, Belmont S.....New York
Musicant, William W.....Brooklyn
Myers, David.....Bronx
Nevin, George F.....Newark
Nixdorf, Wallace B.....Syracuse
Pernice, Salvatore J.....New York
Phillips, Arthur M.....New York
Pisk, Ernest.....New York
Prowda, Tilden M.....Syracuse
Putman, George W.....Albany
Renzetti, Attilio D. Jr.....New York
Ricotta, Joseph J.....Buffalo
Robbins, Milton.....New York
Robertazzi, Raphael W.....Brooklyn
Sachs, Julius J.....Brooklyn
Salik, Julian O.....Bronx
Sands, George W.....New York
Scheinberg, Israel H.....Great Neck
Schenkman, Harry.....Brooklyn
Schneck, Herman.....New York
Schubmehl, Quinton D.....Painted Post
Schumann, David P.....Brooklyn
Schwartz, Abraham.....New York
Schwartz, Stanley E.....Atlantic Beach
Searles, Harold F.....Hancock
Shaw, Ned.....Brooklyn
Shea, James J.....Brooklyn
Shearer, John K.....Schenectady
Sivak, George C.....Brooklyn
Skoluda, Eric R.....New York
Smith, Carl A.....Brooklyn
Stoddard, Raymond H.....Millport

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PHYSICIANS SEPARATED FROM SERVICE

New York—Continued

Taylor, Gordon B.....Utica
Tirman, Robert M.....Brooklyn
Van Landingham, John H.....New York
Van Marter, James H.....Groton
Van Vlack, Hall G.....Jamestown
Wade, Preston A.....New York
Waitzel, Isidor D.....Brooklyn
Watsky, Sheldon R.....Mt. Vernon
Weinstein, Jack.....Brooklyn
Zahn, Daniel W.....Brooklyn

North Carolina

Beckwith, Robert P. Jr...Roanoke Rapids
Dalton, Arthur M.....Durham
Dickson, Brice T. Jr.....Gastonia
Duffy, Richard N.....New Bern
Heffner, Bain L.....Greensboro
King, Herbert A.....Durham
Kirksey, William A.....Fayetteville
Landolt, Allison B.....White Plains
Vandegrift, Harvey N.....Durham

Ohio

Anderson, Robert A.....Dayton
Beck, J. Montgomery.....St. Clairsville
Bell, Wendell M.....Mansfield
Blank, Sanford.....Cleveland
Borden, Robert A.....Crestlin
Burkey, John N.....Cincinnati
Buvinger, Wilson J. Jr.....Cincinnati
Caldwell, Harry E.....Delaware
Dever, Francis X.....Cleveland
Duncan, Wallace S....Cleveland Heights
Durschlag, Sidney W.....East Cleveland
Forthman, William H.....Cincinnati
Fries, William H.....Dayton
Goldman, Harry.....Cleveland
Helm, Albert J.....London
Hopwood, Howard H....Shaker Heights
Hudson, Harry C.....Cincinnati
Hughes, Henry G.....Columbus
Johnson, Richard L.....Lima
Kaplan, Ronald R.....Cleveland Hts.
Katz, Aaron A.....Cincinnati
Kiebler, George M.....Niles
Lenahan, John P.....Cleveland
Lenhart, Francis M.....Defiance
Lyons, Joseph J.....Cleveland
McClelland, Elmer E.....Shadyside
MacDermott, James C. Jr.....Wellington
Morris, Lester C.....Cleveland
Muter, Clyde W.....Warren
Palmer, Richard A.....Toledo
Rittmeyer, Jack L.....Cincinnati
Schechter, Marshall D.....Cincinnati
Schneble, Richard J.....Dayton
Sternfeld, Ernst.....Toledo
Vanordstrand, Howard S..Cleveland Hts.
Webster, Charles A. Jr.....Dayton

Oklahoma

Brown, Clifford A.....Oklahoma City
Diveley, Walter L.....Gerber
Fisher, Roy L.....Frederick
Huff, Dick H. P.....Norman
Kern, Clyde V.....Tulsa
Meis, Armon M.....Oklahoma City
Morgan, Vance F.....Oklahoma City
Moseley, Harrel D.....Oklahoma City
Parrish, Stuart L.....Walters
Russell, Homer B.....Oklahoma City
Saylor, Robert M.....Seiling

Oregon

Amato, Joseph P.....Portland
Anderson, Clifford.....Portland
Dierickx, Francis J.....Forest Grove
Emig, Otto R.....Portland
Erickson, Raymond L.....Beaverton
Gaeden, Norman J.....Portland
Greenwood, Ernest P.....Portland
Guiss, Russell L.....Woodburn
Haworth, James B.....Portland
Moe, Warren Y.....Portland

Pennsylvania

Baron, Raymond C.....Philadelphia
Beckel, Frank L.....Huntingdon
Bixby, Edward W. Jr.....Wilkes Barre
Blasco, Walter J.....Kingston
Boyle, William F.....Philadelphia
Byrne, Joseph T.....Carbondale
Campbell, Joseph L.....Ulster
Capeliari, Elmer E.....Pittsburgh
Cavender, John C.....Philadelphia
Clare, David W.....Apollo
Cleveland, Frank P.....Pittsburgh
Clyman, Byron.....Philadelphia
Culleton, James F.....Sewickley
Davies, William Jr.....Pittsburgh
Dawson, Reese E.....Pittsburgh
Dedinsky, John J.....Smock
De La Vara, Fernando F.....Allentown
Dickensheets, James G.....Philadelphia
Dickenson, James R.....Pittsburgh
Doherty, John H.....Scranton
Douglas, Edgar J.....Oakmont
Dreer, Aaron M.....Philadelphia
Dreier, Joseph F.....Dushore
Duffy, Fred C.....Pittsburgh
Dumeyer, William H.....Johnstown
Dunlap, Stephen E.....Lancaster
Harrer, William J. Jr.....Sharon
Harter, Leo.....Pittsburgh
Hartman, Owen W.....Philadelphia
Heath, Erle M.....Pittsburgh
Heinbach, Robert A.....St. Clair
Helms, David O.....Bethlehem
Konhaus, Carol H.....Mechanicsburg
Lacy, George R. Jr.....Mt. Lebanon
Lazzeri, John J.....Rural Valley
Lenker, Luther A.....Harrisburg
Levin, Emanuel J.....Philadelphia
Lewis, Howard T. Jr.....Pittsburgh
Lewis, Scott B.....West Chester
Liebman, Sydney.....Pittsburgh
Limbert, Lawrence.....Conshohocken
McAdams, Hugh J.....Philadelphia
Mackler, Bruce.....Philadelphia
Markley, Henry E.....Sunbury
Missett, James S.....Drexel Hill
Monheit, Richard S.....Melrose Park
Morgan, William A.....Philadelphia
Myers, David.....Philadelphia
Nickles, William A. III....Shippensburg
O'Connell, Charles L. Jr.....Crafton
Papola, Gino G.....Philadelphia
Paschold, John H.....Perrysville
Purvis, William E.....Franklin
Rau, Raymond L.....Homestead Park
Ross, Gordon L.....Lewisburg
Rowse, Richard F.....Pittsburgh
Rudolph, Herman L.....Reading
Sagone, Arthur L.....Pittsburgh
Schadt, Oliver S. Jr.....Allentown
Schlotter, Donald C.....Bethlehem
Shafer, Edward A.....Kingston
Sidwell, Harvey P.....Delta
Silvers, Arthur H.....Elkins Park
Valentine, Jerome D.....Philadelphia
Ward, Hugh J.....Hazelton
Warden, David E.....Pittsburgh
Watson, Roger E.....Haverford
Weaber, Thomas H. Jr.....Allentown
Weaver, Frank M.....York
Webber, Arthur C.....Coopersburg
Witt, Daniel E.....Williamsport

Rhode Island

Pahigian, Vahey M.....Providence
Vaznaian Vian, George M...Woonsocket

South Carolina

Brooks, Walter E.....Charleston
Burge, Julius C. Jr.....York
Deyerle, Henry P.....Charleston
Moore, McKenzie P. Jr.....Charleston
Morrall, John F. Jr.....Beaufort
Murdoch, John H.....Charleston
Parish, Herman S. Jr.....Manning

South Carolina—Continued

Poliakoff, Samuel R.....Abbeville
Schneider, Leopold A.....Ninety-Six
Shecut, James C.....Orangeburg
Tuten, Harry L.....Charleston
Ward, Aaron C.....Calhoun Falls
Young, John M. Jr.....Charleston

South Dakota

Volin, Verlynne V.....Lenox
Wayne, David M.....Redfield

Tennessee

Dunlap, Arthur C.....Paris
Levin, Jack.....Memphis
Levy, Bertram L.....Mountain Home
O'Connor, Kenneth A.....Oak Ridge
Vlasis, Gus J.....Chattanooga
Williams, Thomas H. Jr....Chattanooga
Yeargan, Reagan L. Jr.....Harriman

Texas

Britton, Bloyce H.....El Paso
Ellis, John W.....Sherman
Levy, Moise D. Jr.....Houston
Powell, Homer.....Dallas
Rosengarten, Leonard M.....Marshall
Thompson, Jesse E.....San Benito
Watkins, Mina D.....Lubbock
Watson, Price T.....Houston
Weinert, Herman Jr.....Galveston
Wynne, Harrison K.....Fort Worth

Utah

Curtis, Homer C.....Salt Lake City
Dorius, John B.....Sandy
Haight, Witney J.....Salt Lake City
Rich, Homer R.....Brigham
Tanner, Richard S.....Salt Lake City

Vermont

Cosgrove, Kevin M.....St. Johnsbury
Dugan, Kermit S.....North Troy

Virginia

Grover, Harle B.....Arlington
Levinson, Joseph E.....Alexandria
Morrissette, William P.....Midlothian
Siegel, Bernard R.....Newport News
Yurko, Leonard E.....Hollidays Cove

Washington

Ehrhart, John D. Jr.....Aberdeen
Mundal, Allen L.....Ephrata
Partlow, Kenneth L. Jr.....Olympia

West Virginia

Linkous, Otis E. Jr.....Welch
Montague, Benjamin F. Jr....Charleston
Oliver, John G.....Petersburg
Randolph, Brady F. Jr.....Sutton
Weaver, Jerome A.....Parkersburg

Wisconsin

Crone, Richard D.....Beloit
Doctor, Charles W.....Racine
Dodge, Robert K.....Stanley
Dwyer, Reinhardt D.....Madison
Halfen, David P.....Sullivan
Hardin, Creighton A.....Madison
Hogan, Larry H.....Milwaukee
Keane, Keith M.....Madison
Knoedler, William H. Jr.....Milwaukee
Saichek, Herbert B.....Milwaukee
Theisen, James K.....Fond du Lac

Wyoming

Barrett, Francis A. Jr.....Lusk
Durham, Harry B. Jr.....Casper

Canada

Carsen, Albert J.....London, Ontario

Puerto Rico

Colon-Bonet, Juan.....Rincon

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ALABAMA

Postgraduate Seminar.—The Medical College of Alabama, Birmingham, and the committee on postgraduate study of the Medical Association of the State of Alabama are setting up a three day postgraduate seminar September 24-26 in the auditorium of the Nurses Home, City Hospital, Mobile. Among the subjects to be discussed, largely by men from the state, are recent advances in hematology, tumors, management of peptic ulcer, common surgical problems, urethane in the treatment of leukemia, the Wassermann test in private practice, cardiac emergencies, controversial points in the treatment of coronary occlusion and the nutritional anemias. All doctors are invited. There will be no registration fee.

ARKANSAS

Drs. Meschan and Reilly to Head Departments.—Full time heads of the departments of pediatrics and radiology, University of Arkansas School of Medicine, Little Rock, have been announced. Dr. Isadore Meschan, former instructor of radiology, Western Reserve University School of Medicine, Cleveland, became head of the department of radiology July 15. He is a graduate of Western Reserve University School of Medicine, 1939, and served in World War II. Dr. William A. Reilly, associate professor of pediatrics at the University of California Medical School, Berkeley-San Francisco, will head the department of pediatrics beginning September 1. A graduate of the University of California Medical School, Berkeley-San Francisco, 1927, he has served on the staffs of the University of California, San Francisco, Franklin and St. Mary's hospitals. From 1942 to 1946 he served in the medical corps, Army of the United States, in Africa, Italy and France.

CONNECTICUT

Clinical Congress.—The Connecticut State Medical Society and the Yale University School of Medicine, New Haven, will hold their twenty-second clinical congress September 16-18. The morning presentations will be given in the auditorium of the Yale University School of Law, and the afternoon panels and symposiums in the amphitheaters of the New Haven Hospital and the School of Medicine. Out of state speakers addressing the congress include:

Dr. Lester Dragstedt, Chicago, Vagotomy in the Treatment of Peptic Ulcer.
Ralph M. Kaufman, New York, Psychiatry in a General Hospital.
Dr. Frank W. Reynolds, Baltimore, Results of the Cooperative Clinic Study of the Treatment of Syphilis with Penicillin.
Dr. Raymond D. Adams, Boston, Treatment of Neurosyphilis.
Dr. Samuel M. Peck, New York, Epidemic Ringworm of the Scalp.
Dr. Howard Ulfelder, Boston, Use of the Vaginal Smear in the Diagnosis of Cancer.
Dr. Orvar Swenson, Boston, Congenital Anomalies Causing Obstruction in Gastrointestinal Tract.
Dr. James H. Means, Boston, Treatment of Thyrotoxicosis.
Dr. Wesley W. Spink, Minneapolis, Brucellosis.
Dr. Isadore Snapper, New York, Boeck's Sarcoid.
Dr. Franklin M. Hanger, New York, Liver Function Tests.
Dr. William Dameshek, Boston, Rationality in the Treatment of Anemia.
Dr. John M. Murray, Boston, Psychotherapy in General Practice and in Psychiatric Practice.

Tuesday's program includes panel discussions on Surgical Treatment of Peptic Ulcer, Treatment of Syphilis, Diarrhea in Infancy, and Psychiatry in the General Hospital and a symposium on Occupational Disease. Wednesday afternoon there will be panels on Diagnosis of Uterine Cancer, "Rooming In for Mothers and Infants," and symposiums on Treatment of Congenital Cardiovascular Anomalies and Thyrotoxicosis. Besides symposiums on Psychotherapy and Pulmonary Granulomas Thursday there will be panel discussions on Infectious Diseases, Liver Disease and Anemia.

IDAHO

Outbreak of Poliomyelitis.—Medical resources of Idaho have been mobilized to fight an outbreak of poliomyelitis which officials say has reached "epidemic proportions" in southwestern Idaho. By the middle of August 60 persons had been stricken this year as compared to 11 in the same period of 1946. The National Foundation for Infantile Paralysis Epidemic Aid Unit Team from Northwestern University Medical School, Chicago, comprising two doctors and three physical therapists, has been assisting.

ILLINOIS

State Hospital Plan Approved.—The state department of health has received notice that the Illinois hospital construction plan was approved by the surgeon general of the U. S. Public Health Service August 8. About $2,770,000 of federal funds is thus released for aiding the construction of local nonprofit hospitals in Illinois during the twelve months that began July 1. A similar amount will be available from the federal government for the same purposes during each of the next four succeeding years. The state has also appropriated $4,850,000 to aid in projects in line with the state plan. Based on the results of a hospital survey completed in 1946, the plan lists the areas according to the magnitude of the need for additional hospital facilities. Areas with no hospitals will have priority. Both federal and state funds will be administered by the state department of public health. A division of hospital construction and services has been organized under the direction of Dr. Henrietta M. Herbolsheimer, Chicago, for this purpose.

Chicago

Society Chooses Site for New Home.—Officials of the Chicago Medical Society and representatives of the Medical Center Commission signed an agreement August 20 for the purchase of 2½ acres of land between Damen and Ogden avenues facing on Congress street as the site for the new $2,000,000 home of the Chicago Medical Society, which it hopes to start building in 1950. In the five story building will be a lecture hall with a seating capacity of a thousand and special quarters for nineteen medical groups, a library, a museum of exhibits and office space.

Institute of Medicine Lecture Series.—The Institute of Medicine will present seven lectures by its fellows in its 1947-1948 series of "Where We Stand Today in Medicine." The meetings will be held on the second and fourth Friday afternoons of each month beginning September 12 from 4:45 to 5:30 in the assembly room of the institute. They will be open without fee to all physicians and allied professional groups. The program is as follows:

September 12, Roy R. Grinker, director, Institute for Psychosomatic and Psychiatric Research and Training, Michael Reese Hospital, Every Doctor a Psychiatrist.
September 26, Robert G. Bloch, professor of medicine, University of Chicago School of Medicine, Tuberculous Calcification: Clinical and Experimental Studies.
October 10, Herman L. Kretschmer, clinical professor of urology, University of Illinois College of Medicine, Present Status of the Prostatic Problem.
October 24, Stanley Gibson, professor of pediatrics, Northwestern University Medical School, Indications for Surgery in Congenital Cardiovascular Anomalies.
November 14, Paul W. Greeley, clinical associate professor of surgery, University of Illinois College of Medicine, Scope and Possibilities of Modern Plastic Surgery.
November 28, John R. Lindsay, professor of surgery, University of Chicago School of Medicine, Ménière's Disease: Diagnosis and Treatment.
December 12, Ralph E. Dolkart, associate in medicine, Northwestern University Medical School, Clinical Problems in the Use of Antibiotic Therapy.

LOUISIANA

Dr. Colomb to Head Department of Psychiatry.—Dr. Henry O. Colomb, New Orleans, has been appointed professor of psychiatry at Louisiana State University School of Medicine, New Orleans, and chief of the department of psychiatry. He will develop a program of undergraduate and graduate teaching at the medical school. He graduated at Tulane University of Louisiana School of Medicine in New Orleans in 1923, and was clinical director of the Connecticut State Hospital, Middletown, for a number of years and assistant superintendent at the Philadelphia General Hospital before setting up his private practice in New Orleans in 1942.

MICHIGAN

Dr. Ruedemann Appointed Head of Department.—Dr. Albert D. Ruedemann, Cleveland, for five years head of the department of ophthalmology, Cleveland Clinic Foundation Hospital, became head of the department of ophthalmology at Wayne University College of Medicine, Detroit, June 15. A graduate of the University of Michigan Medical School, Ann Arbor, 1921, he went to the Cleveland Clinic Foundation Hospital in 1924. Dr. Ruedemann received a gold medal from the American Medical Association for his exhibit of a permanent plastic eye at the San Francisco session of the Association in July 1946.

Expand Isabella County Health Program.—Isabella County, the city of Mount Pleasant and the Central Michigan College of Education are participating in the development of a program that will provide basic public services to all groups

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in the county. Emphasis will be placed on maternal and child health. The state and the federal government are supporting the program, and a large part of the financial support comes from funds allotted to Michigan by the Children's Bureau. Besides the director, Dr. Robert Hall, and his assistant there will be five public health nurses, a health educator, a sanitarian and two clerks on the staff. Attractive quarters have been made available in the Community Hospital, and Dr. Hall has been occupied with setting up committees that will play a large part in the development of the program.

MISSOURI

Kansas City Clinical Conference.—The twenty-ninth annual fall clinical conference of the Kansas City Southwest Clinical Society will be held in Kansas City October 6-9. The out of state speakers include:

William E. Adams, Chicago, Surgical Treatment of Carcinoma of the Esophagus.
Guy A. Caldwell, New Orleans, Diagnosis and Treatment of Low Back Pain Resulting from Trauma.
Roland S. Cron, Milwaukee, Endometriosis.
Joseph S. D'Antoni, New Orleans, Chronic Diarrheas.
Robert Elman, St. Louis, Preoperative and Postoperative Use of Intravenous Fluids.
George H. Ewell, Madison, Wis., Anuria.
Howard K. Gray, Rochester, Minn., Surgery of Malignant Lesions of the Stomach.
Russell L. Haden, Cleveland, Precipitating and Accelerating Factors in Arthritis.
John S. Lockwood, New York, Anticoagulants in Prevention and Treatment of Thrombosis and Embolism.
Douglas W. Maconber, Denver, Practical Suggestions in Early Treatment of Common Wounds.
Robert A. Moore, St. Louis, Nature of Endocarditis and the Effect of Penicillin in Healing.
Eugene P. Pendergrass, Philadelphia, How to Prevent Death from Breast Cancer.
Curtice Rosser, Dallas, Surgical Lesions of the Left Colon.
Leon Schiff, Cincinnati, Diagnosis of Gastric Cancer.
William D. Stroud, Philadelphia, Coronary Artery Disease.
Willard O. Thompson, Chicago, Uses and Misuses of Sex Hormones.

Exhibits, dinners and luncheons are included in the program. The $15 registration fee should be sent to the Kansas City Southwest Clinical Society, 630 Shukert Building, Kansas City 6.

NEW YORK

Arrange Lectures for County Societies.—The Medical Society of the State of New York and the New York State Department of Health have arranged two lectures of postgraduate instruction for the Tompkins County Medical Society. Dr. Lewis I. Sharp, New York, will speak on "The Recognition and Management of Psychosomatic Problems in General Practice" September 15 at the Tompkins County Memorial Hospital, Ithaca, at 8:30 p. m. On November 17 the society will hear Dr. Ralph R. Tompsett, New York, speak on "Antibiotics." For the Otsego County Medical Society a Teaching Evening has been arranged by the county and state societies to be held at the Elks Club in Oneonta September 10. Dr. Joe W. Howland, Rochester, will speak on "Medical Aspects of the Atomic Bomb" and Dr. Julius Redish Lynbrook, N. Y., on "Hypertension and Hypertensive Heart Disease."

Annual Academy Graduate Fortnight.—The Graduate Fortnight of the New York Academy of Medicine will be held October 6-17. The program includes morning panel discussions, afternoon clinics, evening lectures, scientific exhibits and demonstrations relating to disorders of metabolism and the endocrine glands. Out of state physician speakers for the evening lectures are:

Hans Selye, Montreal, Hypertension.
John S. L. Browne, Montreal, the Carpenter Lecture, Adaptation Syndrome in Man.
Louis H. Newburgh, Ann Arbor, Energy Metabolism in Obese Persons.
Abraham White, Ph.D., New Haven, Conn., Relations of the Adrenals to Immunity.
DeWitt Stetten Jr., Boston, Studies in Intermediary Metabolism Conducted with the Aid of Isotopic Tracers.
Daniel C. Darrow, New Haven, Conn., Disturbances in Electrolyte Metabolism in Man and Their Management.
William C. Rose, Urbana, Ill., Role of Amino Acids in Nutrition.
Nathan Shock, Baltimore, Metabolic Functions in Old Age.
Rulon W. Rawson, Boston, Hormonal and Chemical Factors Regulating Thyroid Function.
Edwin B. Astwood, Boston, Clinical Experiments with Antithyroid Compounds.
E. Perry McCullagh, Cleveland, Testicular Dysfunction, Some Clinical Aspects.
Carl G. Heller, Portland, Ore., Use of Androgens in Men.
Arthur T. Hertig, New Haven, Conn., Why Do Women Abort?
Joseph E. Markee, Ph.D., Durham, N. C., Morphological Basis for Menstrual Bleeding.

The registration fee is $5. Complete programs will be sent to nonmember physicians on request. Address Dr. Mahlon Ashford, 2 East 103d Street, New York 29.

New York City

Personals.—Dr. Oswald R. Jones, assistant clinical professor of medicine, Bellevue Hospital Columbia University College of Physicians and Surgeons, New York, has been appointed to a five year term as chairman of the state tuberculosis committee. ——Dr. Richard Kovacs has been elected an honorary member of the Royal Society of Medicine, Section of Physical Medicine, London.——Dr. Jacob M. Gershberg, New York, president of the International Spanish Speaking Association of Physicians, is on a trip to Mexico and Latin America to arrange a congress of Latin American physicians.

Research in Geriatrics.—The New York University College of Medicine and Memorial Hospital for the Treatment of Cancer and Allied Diseases, Welfare Island, will begin a project in research of old age diseases in September. The program will be carried out at the hospital by a staff of university research specialists under the supervision of Dr. J. Murray Steele, associate professor at the College of Medicine and director of the university's Third Medical Division at the hospital. Patients will be available for research over ten to fifteen years, which will make possible a continuous study of old age diseases as they affect the individual. The project calls for the study of a maximum of 10 patients at one time.

NORTH CAROLINA

Personals.—Dr. Charles W. Armstrong, Salisbury, was elected president of the Kiwanis International at the annual convention of the organization in Chicago in July. Dr. Armstrong, a graduate of the University College of Physicians and Surgeons, Baltimore, 1914, who has been health officer of Rowan County for nearly thirty years, was elected to the North Carolina State Board of Medical Examiners in 1944 and was president of the North Carolina Tuberculosis Association in 1941. He is now a director of the National Tuberculosis Association.——William A. Perlzweig, Ph.D., professor of biochemistry, Duke University School of Medicine, Durham, left August 17 to serve as a special adviser in the organization of the Hebrew University-Hadassah Medical School in Palestine.

OHIO

Research on Poliomyelitis.—Dr. Albert B. Sabin, professor of research pediatrics, University of Cincinnati College of Medicine, and attending pediatrician, Cincinnati Children's Research Hospital Foundation, will direct a $50,000 research program at the local foundation through funds supplied by the National Foundation for Infantile Paralysis, Inc., New York. The $50,000 grant will be used for study of the propagation of poliomyelitis viruses in mice of varying genetic constitutions and the immune response of patients to viruses recovered from their own alimentary tracts. He will investigate also whether the absence of epidemics of poliomyelitis in certain countries can be correlated with the development of immunity at an earlier age.

Admission of Mental Patients.—A new plan for handling patients who might be mentally disturbed has been put into action by the Probate Court and the Cincinnati General Hospital. The plan eliminates the necessity of such patients appearing in court under the impression that they have been accused of wrong doing. After examination by the psychiatrist of the Probate Court and of the General Hospital, the judge is left to decide whether the patient should be sent to Longview Hospital or be discharged. The plan was worked out by Judge Davies and Dr. Maurice Levine, with Dr. Milton Rosenbaum, professor of psychiatry and associate director of hospital psychiatric service, University of Cincinnati College of Medicine; Henry Hooper, superintendent, and Mrs. Elizabeth B. Trier, director of social service, all of General Hospital; Dr. Earl A. Baber, assistant professor of psychiatry, University of Cincinnati College of Medicine, and superintendent of Longview Hospital; Ed Penno, staff member; Dr. Douglas A. Johnston, Cincinnati, and Dr. James Robert Hawkins, psychiatrists.

TENNESSEE

Society News.—A Tennessee State Society of Pathologists was formed at the state medical meeting in Memphis in April by fourteen pathologists from various sections of the state. Dr. Alfred Golden, Memphis, was elected president; Dr. William A. De Monbreun, Nashville, vice president, and Dr. Thomas C. Moss, Memphis, secretary-treasurer.

Course in Anesthesiology and Obstetrics.—The postgraduate course in anesthesiology and obstetrics under the direction of Dr. Robert A. Hingson has been extended from a two week period to one month in order to give the matriculating physicians an opportunity to secure more clinical experience.

This course operated during 1943 and 1944 in the Philadelphia Lying-In Hospital. Since 1945 it has been conducted by the departments of obstetrics and gynecology and anesthesiology of the University of Tennessee College of Medicine at the John Gaston Hospital, Memphis. The next session begins September 15.

WASHINGTON

Health Officer of Spokane.—Dr. Jack B. Eason, Olympia, assumed duties as health officer of Spokane July 1. A graduate of Jefferson Medical College of Philadelphia, 1930, he has been health officer for the district including Thurston and Mason counties and the cities of Olympia and Shelton.

Classes for Spastic Children.—Special classes for spastic children will be set up soon in various parts of the state to help them by means of education, physical therapy and other aids. A series of screening clinics will be held to select the limited number who can benefit from the facilities offered. The state departments of public instruction and health have appointed an advisory committee. Plans are under way for expanding spastic classes now supported by several school systems as well as establishing new classes.

GENERAL

Obstetricians, Gynecologists and Abdominal Surgeons.—In the August 23 issue of THE JOURNAL, page 1498, the name of Dr. Clifford V. Ward, Montreal, was inadvertently omitted from the program of the annual meeting of this group. Dr. Ward spoke by invitation on "Blood Platelet Studies During Pregnancy and the Puerperium."

National Safety Congress.—The National Safety Congress and Exposition will be held in Chicago October 6-10. Sensitization Dermatoses, Primary Irritation Dermatoses and the Effect of New Industrial Chemicals on the Skin will be discussed October 8 at the Congress Hotel with Dr. Frederick W. Slobe, Chicago, presiding. Friday morning Dr. Ralph S. McLaughlin, Industrial Health Foundation, Charleston, W. Va., will speak on "Methods for Saving Eyes from Chemical Burns" at the Stevens Hotel at 9:45.

Dr. Telfer Named China Health Aid.—The World Health Organization has appointed Dr. James G. Telfer, Washington, D. C., as port health expert for China. He will help the Chinese ministry of health establish a training center for port and quarantine work. The staff selected by Dr. Telfer will first come to the United States for instruction. Dr. Telfer, on the staff of the U. S. Public Health Service for twelve years, served in the Hong Kong-Canton area in 1939-1940 and in the Philippines both before and after that time.

Tuberculosis Society Elections.—At the recent meeting of the National Tuberculosis Association in San Francisco the following officers were elected: Dr. James R. Reuling, Bayside, N. Y., president; Dr. Herbert L. Mantz, Kansas City, Mo., president-elect, and Dr. H. Stuart Willis, Sanatorium, N. C., secretary.——The National Trudeau Society elected Dr. Howard W. Bosworth, Los Angeles, president; Dr. H. Corwin Hinshaw, Rochester, Minn., president-elect, and Dr. David A. Cooper, Philadelphia, secretary-treasurer.——The National Conference of Tuberculosis Secretaries has elected Mr. Donald E. Pratt, St. Louis, president.

Impostor Solicits Accounts of Deceased Physician.—Notice has been received of a man, posing as a representative of the American Medical Association, calling on a doctor's widow for the purpose of soliciting accounts left by her husband. The heading on his listing sheet is A. M. A., Department of Estates, Offices at Hill City, South Dakota, P. O. box 265. The American Medical Association employs no such individual nor has it any association with an individual empowered to solicit accounts in this fashion. Furthermore, the Association would appreciate any information concerning this man or any other of his kind so that whatever action is indicated can be taken.

Special Society Elections.—The American Federation for Clinical Research has elected as officers for the coming year Drs. Paul M. Aggeler, San Francisco, president; John S. La Due, New York, secretary; Charles H. Rammelkamp, Cleveland, treasurer. Meetings of the organization for this year are: Far Western Section at the San Francisco County Medical Building, San Francisco, November 6; Midwestern Section at the Knickerbocker Hotel, Chicago, October 30; Eastern Section at Cornell University Medical College, New York, December 12, and Southern Section at the Roosevelt Hotel, New Orleans, January 30; national meeting, Atlantic City, May 4, 1948.

Prevalence of Poliomyelitis.—Reports of cases of poliomyelitis for the periods indicated have been received from the division of public health methods, U. S. Public Health Service:

Division and State	Week Ended Aug. 23, 1947	Week Ended Aug. 24, 1946	Week Ended Median 1942-1946	Total to Aug. 23, 1947	Total to Aug. 24, 1946	Total* March 16-Aug. 23, 1947	Total* March 17-Aug. 24, 1946
New England:							
Maine	2	2	2	11	11	8	11
New Hampshire	3	13	4	10	76	6	75
Vermont	2	4	1	14	17	6	13
Massachusetts	27	17	17	85	63	78	59
Rhode Island	13	3	1	60	13	59	13
Connecticut	6	2	16	32	36	29	28
Middle Atlantic:							
New York	54	105	105	245	455	209	422
New Jersey	16	16	26	64	107	58	101
Pennsylvania	21	16	16	117	109	103	97
East North Central:							
Ohio	50	48	30	153	276	143	261
Indiana	4	20	16	44	107	28	102
Illinois	53	183	121	231	845	209	837
Michigan	25	76	13	126	313	102	305
Wisconsin	21	95	15	57	246	33	233
West North Central:							
Minnesota	20	263	14	86	1,612	73	1,611
Iowa	8	43	15	63	254	55	245
Missouri	6	95	10	48	478	38	471
North Dakota	13	40	2	49	161	44	161
South Dakota	1	74	0	4	219	2	219
Nebraska	18	29	9	104	213	97	212
Kansas	8	60	6	49	413	31	409
South Atlantic:							
Delaware	29	3	1	71‡	8	71‡	8
Maryland	7	12	9	33	39	27	37
District of Columbia	0	2	2	5	8	3	7
Virginia	9	11	11	54	60	44	54
West Virginia	8	5	5	31	37	27	34
North Carolina	17	4	4	62	60	47	53
South Carolina	0	0	4	10	18	9	15
Georgia	4	14	2	39	101	32	93
Florida	2	11	2	61	437	36	388
East South Central:							
Kentucky	0	10	10	22	67	21	64
Tennessee	1	19	10	41	85	29	76
Alabama	5	21	5	33	288	20	285
Mississippi	6	22	2	29	186	12	169
West South Central:							
Arkansas	1	38	4	44	201	33	189
Louisiana	0	21	2	41	229	23	210
Oklahoma	1	13	7	33	219	22	213
Texas	7	34	34	125	664	100	636
Mountain:							
Montana	4	.	1	15	63	13	47
Idaho	11	1	0	67	10	57	10
Wyoming	1	12	2	11	61	8	60
Colorado	1	78	12	33	502	28	501
New Mexico	2	9	3	13	77	10	76
Arizona	6	8	3	23	67	20	64
Utah	0	8	8	7	44	2	38
Nevada	0	0	0	0	3	0	3
Pacific:							
Washington	8	31	16	66	164	58	131
Oregon	6	12	12	34	59	29	55
California	22	195	24	536	873	387	786
Total	529	1,806	...	3,191†	10,654‡	2,579†	10,187‡
Median, 1942-1946	...	....	931	5,239		4,842	

* Last two columns show reported incidence since approximate seasonal low week (week ended between March 15 and 21).
† Includes delayed reports of 18 cases, Delaware.
‡ Figures changed by corrected reports.

CORRECTION

Eosinophilic Granuloma of Bone.—The author of the communication entitled "Eosinophilic Granuloma of Bone" in THE JOURNAL, August 16, page 1437, desires that the words "to the paper" be inserted in the eleventh line after the word "made."

Marriages

ZENAS W. FORD JR., Fayetteville, Ark., to Miss Virginia Fern Marsh in Ancon, Canal Zone, April 8.

WARD L. OLIVER, Cobleskill, N. Y., to Miss Virginia M. Loucks of Gloversville April 8.

JOHN T. BRANCIFORTE, Bondsville, Mass., to Miss Helena E. Wilga of Ware April 13.

PAUL M. BRENNER, Quincy, Ill., to Miss Elizabeth Brasfield of Hickman, Ky., May 3.

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Deaths

Elliott Carr Cutler ✠ Moseley professor of surgery at Harvard Medical School and at the graduate school in Boston, died at his home in Brookline, Mass., August 16, aged 59, of carcinoma of the prostate. Dr. Cutler was born in Bangor, Maine, in 1888, and graduated from Harvard Medical School in 1913. At the outbreak of World War I he was placed in charge of the first Harvard medical unit in Paris, receiving a captain's commission in May 1917 and a promotion to major when placed in charge of Base Hospital number 5. Returning to civilian life in 1919, he became an instructor in surgery at Harvard and in 1921 was named chairman of the department of surgery and the laboratory of surgery. He served as professor of surgery at Western Reserve University School of Medicine and director of surgery at Lakeside Hospital, Cleveland, from 1924 to 1932, when he succeeded the late Dr. Harvey Cushing as Moseley professor of surgery at Harvard and chief surgeon at the Peter Bent Brigham Hospital.

During the early part of World War II he was head of the medical aid division of the Massachusetts Committee on Public Safety. In 1942 he became colonel in the medical corps, Army of the United States, and later was promoted to brigadier general. He served with distinction as chief consultant in surgery and as chief of professional services in the European Theater of Operations and in 1945 was appointed consultant to the Veterans Administration. He was awarded the Legion of Merit, the Distinguished Service Medal with Oak Leaf Cluster, the Order of the Empire by King George VI of Great Britain, the Croix de Guerre by the French government, Companion of the Order of the Bath, and Chevalier of the Legion of Honor. At the time of his death Dr. Cutler was consultant to the surgeon general of the army and a member of the special medical advisory committee to the Secretary of War. He was a founder of the American Board of Surgery, a member of the American Surgical Association, Society of Clinical Surgery, New England Surgical Society, American Heart Association, American Association for Thoracic Surgery, American Society for Clinical Investigation, Society of Experimental Biology and Medicine, American Society for Experimental Pathology and the Association of Military Surgeons of the United States. Dr. Cutler was a member of the Committee for the Protection of Medical Research of the American Medical Association. In 1927 he was elected a member of the Royal Academy of Medicine of Rome, an honorary fellow of the Royal College of Surgeons of England and was a member of other scientific societies in this country and abroad. He was a fellow of the American College of Surgeons. An honorary degree was conferred on Dr. Cutler by the University of Strasbourg, France, in 1938 and by the University of Rochester, Rochester, N. Y., in 1946. He was the author with Dr. Robert Zollinger of "Atlas of Surgical Operations," an associate editor of the *American Journal of Surgery* and a member of the editorial board of the *British Journal of Surgery*. He was a member of the board of overseers of Harvard University from 1927 to 1932 and president of the Associated Harvard Clubs, 1936-1937. Among his numerous other publications was an extensive article in the *Archives of Surgery* in 1924 on the Surgical Treatment of Mitral Stenosis in which he reported what was said to be the first successful operation on the valves of the human heart.

Hibbert Winslow Hill, Hackensack, Minn.; born in St. John, N. B., Sept. 16, 1871; M. B., University of Toronto Faculty of Medicine in 1893, with a postgraduate scholarship; appointed demonstrator in pathology and bacteriology and in charge of the clinical laboratory of the Toronto General Hospital; in 1895 took a postgraduate course in bacteriology at the Johns Hopkins Hospital; during the following years served as director of the bureau of laboratories for the Brooklyn health department and of the Boston board of health; in 1899 received the Starr Gold Medal with an M.D. from Toronto University; during his residence in Boston was extramural instructor in bacteriology at Harvard Medical School; for many years assistant director of the laboratories and epidemiologist for the Minnesota State Board of Health and assistant professor of bacteriology at the University of Minnesota; served as director of the Institute of Public Health in the University of Western Ontario, London, where he was professor of public health and medical officer of health of the city of London; for many years executive secretary of the Minnesota Public Health Association; during World War I served on the headquarters staff of the First Military District of Canada; later appointed director of laboratories of the Vancouver General Hospital and professor of bacteriology and of nursing and health in the University of British Columbia; served as chairman of the laboratory section of the American Public Health Association and as a member of various committees of that section; at one time editor of the *Minnesota Public Health Journal;* author of the "New Public Health"; "Sanitation for Public Health Nurses," "New Hygiene" and contributed to other volumes; one of the founders of the Boston Bacteriological Club; member of many medical and scientific societies; in 1930 received the honorary degree of LL.D. from the University of Western Ontario; died May 23, aged 75, of complications from a spinal cord lesion.

Thomas Henshaw Kelly ✠ San Francisco; born in Covington, Ky., Jan. 5, 1890; Medical Department of the University of Cincinnati, 1914; associate clinical professor of obstetrics and gynecology at the Stanford University School of Medicine, where he had been acting chairman of the department, 1944-1945; past president and secretary of the San Francisco County Medical Society; past president of the San Francisco Gynecological Society; member of the House of Delegates of the American Medical Association in 1935; secretary of the National Federation of Obstetrical and Gynecological Societies; fellow of the Pacific Coast Society of Obstetrics and Gynecology; member of the council from 1929 to 1938 and chairman of the council from 1933 to 1936, California Medical Association; trustee from 1939 to 1945, chairman of the executive committee, assistant secretary and later assistant treasurer of the California Physicians' Service from 1939 to 1944; served during World War I; chief of the obstetric service, Mount Zion Hospital; on the staff of St. Francis Hospital; founded and was first editor of the *Bulletin of the San Francisco County Medical Society;* died May 10, aged 57, of coronary occlusion.

George Wade Wilson, Venice, Calif.; born in St. Louis in 1891; St. Louis University School of Medicine, 1914; assistant in medicine and pathology from 1915 to 1917 and since 1924 associate professor of medicine at his alma mater; assistant in pathology and bacteriology at the Rockefeller Institute for Medical Research in New York from 1917 to 1919; professor and head of the departments of pathology, bacteriology and preventive medicine at the Loyola University School of Medicine in Chicago, 1919-1920, and associate in medicine at the Washington University School of Medicine in St. Louis from 1920 to 1924; at one time associate professor of clinical medicine at the University of Southern California School of Medicine in Los Angeles; served on the staffs of St. Vincent's Hospital in Los Angeles, Mercy Hospital in Chicago and Jewish, Barnes and Missouri Pacific hospitals in St. Louis; formerly consultant to the New York Central Railroad; shot and killed by a patient June 6, aged 55.

Walter Hobert Watterson ✠ La Grange, Ill.; born in Fairbury, Ill., Feb. 12, 1875; Northwestern University Medical School, Chicago, 1901; member of the American College of Chest Physicians; member and past president of the Chicago Tuberculosis Society; fellow of the American College of Physicians; served during World War I; affiliated with the Zace Sanitarium in Winfield and the West Lake Hospital in Melrose Park; formerly on the staff of the Veterans Administration Facility in Hines, Ill., superintendent of the Chicago Municipal Tuberculosis Sanitarium, Lake Breeze Sanitarium in Waukegan, Ill., and the Pokegama Sanitarium in Pokegama, Minn.; at one time affiliated with the Cook County Tuberculosis Hospital in Oak Forest, Ill.; formerly instructor in tuberculosis for the U. S. Public Health Service; died June 17, aged 72, of heart disease.

Edward L. Hanes ✠ Rochester, N. Y.; born in Chenango Forks, N. Y., Jan. 2, 1871; Albany Medical College, 1899; past president of the Rochester Academy of Medicine; member of the Rochester Pathological Society and the American Psychiatric Association; fellow of the American College of Physicians; during World War I in charge of the neuropsychiatric division of base hospital number 19, serving overseas; later served as consultant in neuropsychiatry for the Veterans Administration; served on the staffs of the Craig Colony in Sonyea, Hudson River State Hospital at Poughkeepsie, Rochester State Hospital, Rochester General Hospital, St. Mary's Hospital and the Genesee Hospital; author of "Minds and Nerves of Soldiers"; died in Altadena, Calif., June 14, aged 76, of coronary disease.

Rood Taylor, La Jolla, Calif.; born in Columbia, S. D., May 12, 1885; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1910; clinical associate professor of pediatrics at the University of Minnesota Medical School and formerly associate professor of pediatrics at the University of Minnesota Graduate School; at one time associate in section on pediatrics at the Mayo Clinic in Rochester, Minn.; member of the American Pediatric Society; received a Ph.D. in pediatrics from the University of Minnesota in 1917; died May 2, aged 61, of hypertensive heart disease.

Otis Johnson Baldwin, Chicago; St. Louis University School of Medicine, 1903; member of the American Medical Association; affiliated with the West Suburban Hospital in Oak Park and St. Ann's Hospital; formerly on the staffs of the Chicago and the Kankakee (Ill.) state hospitals; died June 25, aged 79, of gastric ulcer and heart disease.

Malcolm Campbell ✠ New York; Medical College of Virginia, Richmond, 1901; professor of gynecology and obstetrics at the New York Polyclinic Medical School and Hospital; fellow of the American College of Surgeons; served during World War I; on the staff of St. Clare's Hospital; died June 1, aged 71, of coronary thrombosis.

Charles Broadway Danruther, La Porte, Ind.; Indiana University School of Medicine, Indianapolis, 1914; member of the American Medical Association; served as city health officer and as county coroner; died in the Holy Family Hospital June 16, aged 55.

Arthur Lardovic Duplantis, Chicago; Chicago College of Medicine and Surgery, 1913; member of the American Medical Association; died June 29, aged 65, of coronary thrombosis.

Robert Lee Edwards, Salem, Ore.; University of Oregon Medical School, Portland, 1914; member of the American Medical Association; died June 7, aged 67, as the result of injuries received in an automobile accident in August 1946.

Floyd Lester Gilles ✠ Minneapolis; Syracuse University College of Medicine, 1917; served during World War I; on the staffs of the Asbury Hospital and Fairview Hospital; died recently, aged 55, of heart disease.

William H. Goodrich ✠ Augusta, Ga.; University of Georgia Medical Department, Augusta, 1897; emeritus professor of clinical gynecology at his alma mater, where he formerly served as dean; formerly medical superintendent of the University Hospital; accidentally drowned recently while fishing in Port Royal Sound, S. C., aged 73.

Adam Mader Hauer ✠ Lebanon, Pa.; Johns Hopkins University School of Medicine, Baltimore, 1939; diplomate of the National Board of Medical Examiners; interned at the Lancaster General Hospital in Lancaster; served overseas in the medical corps, Army of the United States, during World War II; city school physician; associate surgeon, Good Samaritan Hospital; drowned May 11, aged 33, when his boat was swept over the Holtwood Dam on the Susquehanna River while fishing.

Maude Noble Haven, San Francisco; Cooper Medical College, San Francisco, 1900; formerly on the staff of the Stanford University Hospital where she died May 28, aged 74.

Peter Matthias Holl, Minneapolis; Minnesota Hospital College, Minneapolis, 1887; Bellevue Hospital Medical College, 1888; served as city physician; member of the American Medical Association; died in the Northwestern Hospital recently, aged 84, of arteriosclerotic heart disease and encephalopathy.

John Conrad Holzberger ✠ Brooklyn; Long Island College Hospital, Brooklyn, 1915; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; served during World War I; on the staffs of the Brooklyn Eye and Ear, Bethany Deaconess and Wyckoff Heights hospitals; died May 31, aged 54.

Ben Hudson, Springfield, Ill.; St. Louis Medical College, 1885; died in St. Louis May 15, aged 86, of a fractured hip received in a fall.

Sam Jaeggli, Moulton, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1920; member of the American Medical Association; served in the Texas National Guard on the Mexican border and during World War I; died recently, aged 55, of coronary thrombosis.

Galvin Luther Johnson ✠ Pauls Valley, Okla.; Memphis (Tenn.) Hospital Medical College, 1903; served as vice president of the Oklahoma State Medical Association and as a member of the state board of medical examiners; affiliated with the Lindsey-Johnson-Shirley Hospital; died May 11, aged 67, of heart disease.

Ellis Adrian Johnston, Seattle; Northwestern University Medical School, Chicago, 1904; served in the medical corps of the U. S. Army as a captain and with the American Expeditionary Forces during World War I; formerly health officer of Helena, Mont., where he served as coroner of Lewis and Clark County; died suddenly June 4, aged 70, of coronary thrombosis.

Sherman J. Jones, Hastings, Neb.; College of Physicians and Surgeons, Keokuk, Iowa, 1891; Rush Medical College, Chicago, 1898; member of the American Medical Association; on the staff of the Mary Lanning Memorial Hospital; died May 26, aged 86, of arteriosclerosis.

Edward Philip Kennedy, Swaledale, Iowa; State University of Iowa College of Medicine, Iowa City, 1912; member of the American Medical Association; health officer; on the staff of St. Joseph's Mercy Hospital in Mason City, where he died May 27, aged 65, of coronary occlusion.

Solomon S. Kerr, Lincoln, Ill.; Chicago College of Medicine and Surgery, 1917; affiliated with the Lincoln State School and Colony; died May 20, aged 66.

Elmer Christian Kieffer, Reading, Pa.; Medico-Chirurgical College of Philadelphia, 1899; died recently, aged 73.

Joe Hilliard Kirby Jr., Loris, S. C.; Tulane University of Louisiana School of Medicine, New Orleans, 1942; interned at the Medical College of Virginia, Hospital Division, Richmond; member of the American Medical Association; served in the medical corps, Army of the United States, during World War II; died in New Orleans May 16, aged 29, of acute leukemia.

Casimir Boleslaus Kitowski ✠ San Antonio, Texas; University of Texas School of Medicine, Galveston, 1915; served during World War I; examining physician for the Selective Service system in Bexar County during World War II; member of the staffs of the Nix, Physicians and Surgeons and Medical and Surgical Memorial hospitals; died recently, aged 58, of cerebral hemorrhage.

Wilhelm Edmund Harmon Krechting ✠ Washington, D. C.; Johns Hopkins University School of Medicine, Baltimore, 1906; died May 27, aged 69, of cerebral hemorrhage.

Thomas Downs Laftry, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1899; member of the American Medica. Association; medical director of the Great Northern Life Insurance Company; for many years affiliated with the Norwegian-American Hospital, where he died May 23, aged 79, of agranulocytosis.

Louis A. Larson, Kane, Pa.; Jefferson Medical College of Philadelphia, 1896; died June 5, aged 75, of coronary thrombosis.

Julian Dyer Lucas, Brookline, Mass.; Tufts College Medical School, Boston, 1902; served during World War I; died June 3, aged 69.

Earl Lane Lupton, Sebastopol, Calif.; College of Physicians and Surgeons, Los Angeles, 1917; served during World War I and as public health director in Los Angeles city and county; died June 5, aged 52, of gastric hemorrhage.

Fred Houston Mecom ✠ Columbia, La.; Memphis (Tenn.) Hospital Medical College, 1907; served during the Spanish-American War; died June 3, aged 69, of cerebral hemorrhage.

George Alfred Plummer ✠ Rochester, N. Y.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1902; member of the Iowa State Medical Society; past president of the Howard (Iowa) County Medical Society; fellow of the American College of Surgeons; served during World War I; formerly president of the board of education of Cresco, Iowa, where he was health officer and on the staff of St. Joseph Mercy Hospital; died May 23, aged 68.

Lilburn Woods Renfro ✠ Seattle; Rush Medical College Chicago, 1913; served during World War I; died May 3, aged 70, of coronary thrombosis.

Nicholas Aloys Schneider ✠ St. Louis; St. Louis University School of Medicine, 1921; formerly on the faculty of his alma mater; on the staffs of the Alexian Brothers Hospital and St. Anthony's Hospital, where he died May 3, aged 50, of hemorrhage of the spleen.

Stephen Herbert Smith ✠ Pasadena, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1905; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; medical director of the Las Encinas Sanitarium; died June 3, aged 66, of coronary thrombosis.

Ernest Brent Thompson, El Paso, Texas; Vanderbilt University School of Medicine, Nashville, 1914; member of the American Medical Association; served during World War I; died recently, aged 58, of diabetes mellitus and acute appendicitis.

Frank Warren White, Rockwood, Pa.; Tufts College Medical School, Boston, 1907; member of the American Medical Association; died recently, aged 66, of congestive heart disease.

Martha Alice Wood ✠ Houston, Texas; University of Texas School of Medicine, Galveston, 1903; member of the South Texas District Medical Society, Texas Society of Pathologists and the American Society of Clinical Pathologists; for many years director of the clinical laboratory and of pathology at the Methodist Hospital; died recently, aged 69, of coronary occlusion.

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Foreign Letters

LONDON

(From Our Regular Correspondent)

July 26, 1947.

Medical Cooperation with the Dominions

At a meeting of the council of the British Medical Association the president, Sir Hugh Lett, introduced the report of a special committee which had been considering means for securing closer liaison with the British dominions in matters affecting the common interests of practitioners in them and in Britain. The need for this had been strongly felt by the committee, which proposed that the Canadian Medical Association, the Federal Council of the Association in Australia, the New Zealand branch of the association, the South African Medical Association, the Medical Association of Eire, the Newfoundland Medical Association and the branches of the association in southern Rhodesia be invited to cooperate with the council in London in establishing a "British Commonwealth Medical Council" for the purpose of developing closer contact between practitioners in Britain and in the various dominions, for advancing the status of British medicine, for the discussion and exchange of views on matters of common interest and for promoting an exchange of professional facilities. Each member association would appoint three representatives on the Commonwealth Council, which would meet at least once a year, first in London in 1948.

Arising out of this was the important point of men who came to London for postgraduate work and in some cases for undergraduate work. A number of bodies were interested in these people, but there was no communication among them and there was a certain amount of overlapping. The committee felt that when a medical man came to London on a visit from the dominions he should be advised to go straight to the British Medical Association, where he would be given information and help in various directions on both the academic and social sides. It was not merely a matter of formal arrangements for study but of a personal welcome. It was therefore further proposed that the principle of establishing an Empire Medical Advisory Bureau at the British Medical Association House to assist practitioners, particularly those from the dominions and colonies, visiting Britain, be approved, and that the secretary be instructed to draw up a detailed plan for the consideration of the council. The proposal was adopted.

Penicillin Treatment of Osteomyelitis in Childhood

The striking improvement in the results of treatment of staphylococcic osteomyelitis of children due to penicillin is well known. But the results in a series of unselected cases at the National Hospital for Sick Children, Great Ormond Street, mark an advance by showing the extent to which operation for removal of the affected bone can be discarded. They were recorded in the *British Medical Journal* May 31 by T. Twistington Higgins, Denis Browne and Martin Bodian. The details of treatment are important since there is no agreement as to the dosage of penicillin or as to the surgical intervention which may be necessary in addition. In 31 consecutive cases of acute osteomyelitis 16 occurred under 1 year of age, the others ranging up to 12 years. The lesions were in the long bones in 23 cases, other sites being the external cuneiform, frontal bone, sternum and maxilla. In 4 the infection had spread to a neighboring joint. Soft tissue abscesses occurred in 12 cases and septicemia in 3. The duration of the disease before admission was less than one week in 19, up to four weeks in 8, and up to eight weeks in 3. Staphylococcus aureus was grown from the blood stream in 2 cases and from abscesses or joints in 12.

Penicillin treatment was begun at once without waiting for the bacteriologic report. The dosage was 1,000 units every twenty-four hours per pound of body weight given by intramuscular injection at intervals of four hours. It was considered safest to continue this treatment for at least three weeks. In the surgical treatment the limb was immobilized in plaster so that inspection of the affected region and aspiration could be performed easily. Immobilization was not prolonged much beyond the period of penicillin treatment. The treatment differed from that generally followed in 13 cases in which pus formed outside the infected bone. In all these the pus was aspirated at intervals depending on the rate of reformation—in most cases daily for the first few days, then at longer intervals. The pus was always replaced by injecting penicillin in a dose of 2,000 to 5,000 units.

In all cases, to the authors' surprise, pus finally ceased to form and healing was complete without sinus formation. The advantage of this conservative treatment was that it avoided the disastrous change in outlook which occurs when the single penicillin controllable infection becomes complicated by nonsensitive organisms. The immediate clinical results were striking. Children admitted in great pain with high temperatures were happy again within forty-eight hours. Soft tissue swellings without formation of pus usually subsided in four or five days. Functional results were perfect in all cases but 1.

There was another series of 4 cases of acute suppurative arthritis. These were treated with aspiration and penicillin replacement. Finally there were 5 cases of chronic osteomyelitis: 3 of the rib, 1 of the os calcis, and 1 of the ilium. The affected bone was completely removed. All granulations were carefully scraped away, and penicillin in solution or in powder was instilled. The wound was then sewn up to avoid contamination by penicillin resisting organisms, and firm pressure was applied by elastoplast. Healing took place in all. It is important to note that this treatment is applicable only to cases in which all infected bony and soft tissue can be removed. Cases in which this is not possible, as in the upper end of the femur or in the vertebrae, still remain intractable once a communication has been formed with the surface of the body.

The British Journal of Cancer

Though research on cancer has been active for many years and the Imperial Cancer Research Fund was founded forty-four years ago under the direction of the Royal College of Physicians and Surgeons, it is only now that a journal devoted wholly to cancer has appeared. This quarterly, called the *British Journal of Cancer*, is the official organ of the British Empire Cancer Campaign. The need for a specialized journal became acute during the war years. The synthesis by Kennaway and Cook of the carcinogenic chemicals ten years ago has stimulated research in this and other countries. Discoveries followed in America on pure line breeding and hybridization of mice with a high incidence of mammary cancer, and Bittner's revelation of the tumor agent in the milk of mice. An outlet for the large volume of work had to be found in the two British journals devoted to pathology and bacteriology, the American journals of cancer research and other channels. Because of the lack of special journals, the papers on cancer were widely scattered. According to Professor Kennaway they were dispersed in some sixty journals and annual publications.

The first number is profusely illustrated. In the article on "Invasion of the Internal Mammary Lymph Glands in Carcinoma of the Breast," from the Bland Sutton Institute of Pathology of the Middlesex Hospital, R. S. Handley and A. C. Thackray report that in 4 out of 5 unselected cases of cancer of the breast a lymph gland of the internal mammary chain, removed through an incision in the second intercostal space at

or shortly after operation, was proved histologically to contain carcinoma, though in only 2 cases were there axillary deposits. They suggest that the technic of radical mastectomy should be modified to include removal of the second space internal mammary lymph gland. That might assist the prognosis and the postoperative treatment with radiation. Another article is "Abnormal Mitosis in Tumors," by P. C. Koller and "Induction of an Experimental Tumor of the Lens," by Ida Mann. The author has shown that a tumor can be induced by chemical carcinogens, although the lens is an organ in which tumors never occur naturally. The publishers of the *British Journal of Cancer* are Messrs. H. K. Lewis & Co., Ltd., 136 Gower Street, London W. C. 1. The annual subscription is $8.40.

COPENHAGEN

(From Our Regular Correspondent)

Aug. 7, 1947.

The Frequency of Cirrhosis of the Liver

Half a century ago, cirrhosis of the liver was quite common and was traced to overindulgence in alcohol. Now it has become quite uncommon, and we have become diffident about its genesis and relationship to alcohol. At the hospital De Gamles By, Dr. J. Bock of Copenhagen has scrutinized the findings of 3,177 postmortem examinations conducted in the period 1939-1946. He succeeded in finding 137 cases (4.3 per cent) in which, with only one exception, Laënnec's cirrhosis of the liver was found. As none of the patients in this hospital were under the age of 61, the aforementioned percentage must not be taken as a mirror of the population of Denmark as a whole, but it does show that we have not completely rid ourselves of this disease and that its sex incidence seems to have changed of late. A few years ago, males were supposed to be more prone to this disease than females; but in the present study there were only 47 males to 90 females. In only 5.8 per cent was there a history of chronic alcoholism, and the correct diagnosis was made during life in only 11 cases. Abandoning the cocksure attitude of a past generation, Dr. Bock admits that we must now look for a new factor to explain the present tendency of cirrhosis of the liver to attack elderly women.

Sinusitis in Children

At the Finsen Institute in Copenhagen there is a special "ambulatorium" to which children are sent for light treatment. The head of this department, Dr. Eigil Rekling, and the head of the radiologic department of the Finsen Institute, Dr. Börge Worning, since 1937 have paid special attention to the part played by sinusitis in the chronic, catarrhal conditions of the upper respiratory tract of children. Their recent communication on the subject, published in the June 20 issue of *Nordisk medicin*, covers the year 1938, when 683 children were referred to the "ambulatorium" for diagnosis and treatment. Five hundred of these children between the ages of 3 and 15 were subjected to a systematic examination of the upper respiratory tract with special reference to x-ray findings. Many of them suffered from mucopurulent rhinitis, cough and various conditions commonly associated with tonsillitis and adenoids.

The examiners were surprised to find an impressive proportion of these children, 41 per cent of the boys and 38 per cent of the girls, suffering from sinusitis. By the inclusion of children presenting no signs of sinusitis, this investigation was provided with controls. The maxillary sinus was most often involved, the frontal sinus seldom, and only when the ethmoid sinus was also diseased. The maxillary sinus was never painful or tender, and many of these cases would have been overlooked and labeled as "tonsils and adenoids" but for the telltale evidence of the x-ray examination.

Is Appendicitis a Seasonal Disease?

A generation ago the Nestor of abdominal surgery in Denmark, Professor Rovsing, taught that appendicitis is comparatively frequent in September on account of overindulgence in fruit, and at Christmas time on account of a whole hearted devotion to Christmas fare. He passed these impressions on to his colleagues with the forceful emphasis which made him in many quarters a popular teacher. But were his deductions sound? Hardly, to judge by a study recently undertaken by Dr. Franz Sörensen, who has calculated the monthly incidence of appendicitis dealt with at a hospital in Aalborg in the twenty-five year period January 1922-January 1947. In 2,076 cases the diagnosis of appendicitis was confirmed by operation. His tabulation of cases according to the months in which they began shows a peak of 207 in July and a minimum of 144 in December. Between these two extremes (which in themselves are not very far apart) the cases were distributed among the remaining ten months with remarkable impartiality. More interesting than this refutation of an old fallacy is the disquieting and humiliating observation that 26 per cent of all these patients belonged to the second and third stages of appendicitis, with evidence of peritonitis.

Claims by Patients for Compensation

Recent communications in the medical press show how dangerous the practice of medicine has become for the doctor himself. The problem is largely one of loyalties. A generation or two ago relations between patient and family doctor were so personal and amicable that claims for compensation for mistakes were almost unthinkable. Even now doctors are seldom called to account for their diagnostic mistakes. Perhaps the public does not realize the tremendous importance of a correct diagnosis. In an analysis of 220 claims by patients for damages, Dr. Hans Heckscher has shown that in 36 cases an injection through the skin led to trouble for the doctor; in 10 cases an injection into the forearm was claimed to have led to "paralyses and invalidism" requiring the soothing balm of pecuniary compensation. An eminent jurist, Dagfinn Dahl, has suggested that claims for compensation have become numerous largely because money is now available for meeting such claims out of the pockets of impersonal insurance societies. So we have this curious situation: To protect himself a doctor subscribes to an insurance society and in so doing is asking for trouble. Not that he can avoid it, now that the public has acquired the habit of mulcting insurance societies for the alleged mistakes of doctors. However true the dictum "Insurance breeds claims," we cannot break loose from this vicious circle. In 1941 the Danish Medical Association created a committee to act in an advisory capacity with regard to alleged doctors' mistakes, and now the doctor who makes them, or is accused of making them, has no excuse for the unpardonable folly of dealing directly with the patient and his lawyer.

The Parking of Doctors' Cars

The other day a doctor got into trouble with the police in Copenhagen over the untimely parking of his car. It was quite a trifling incident but it led to a heart to heart talk between the representatives of the two professions, both indispensable to the public and both endowed with the priceless gift of a taste for compromise. The doctors said, in effect, "We do so fully appreciate your sense of law and order," to which the police replied with a friendly bow "We do so appreciate your difficulties when you give your medical services to the public, ourselves included." So it was arranged that some latitude should be shown to doctors over parking rules, provided they were not flagrantly ignored. And the doctors of Copenhagen are put on their honor not to abuse the benevolent inattention of the custodians of the law.

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ITALY

(From Our Regular Correspondent)

FLORENCE, June 30, 1947.

Epidemiology and Prophylaxis of Typhoid

Professor G. Mazzetti, director, Hygienic Institute, University of Florence, presented to the medical academy in Pistoia a report on the prophylaxis and epidemiology of typhoid. He spoke briefly on the significance of some epidemics which occurred recently in Prato and in Florence. The epidemiology of typhoid still lacks an explanation for several problems, especially those of epidemics originating in water supplies which cannot be confirmed by bacteriologic investigations.

Professor Mazzetti reviewed the laboratory methods which aid in diagnosis. He emphasized the significance of the antibodies O, H and Vi. The antibodies O are of specific significance in serologic differentiation between patients with typhoid and persons immunized against typhoid-paratyphoid, since in typhoid they appear early and disappear more rapidly than the H antibodies, while in vaccinated persons they do not appear at all or only temporarily, so that the observation of O antibodies in the patient and especially the determination of their increase during the disease can be considered as a definite criterion in the diagnosis of typhoid fever. The search for Vi antibodies is of special importance for tracing carriers of typhoid. Recent papers of foreign authors confirm these observations. This technic is the only means of studying the spread of epidemics of typhoid, by finding the source of the contagion.

Professor Mazzetti recalled the methods of prophylaxis of typhoid, including the vaccines administered by either the subcutaneous or the oral route; he insisted on the usefulness of extending immunization by the oral route.

Technic for Descending Pyelography

Drs. Conzi and Zaccone presented to the Medical Academy of Genoa a report on a new method for carrying out descending pyelography. They pointed out the difficulties that may be encountered in the interpretation of the roentgenograms when normal technics of descending pyelography are used. They recalled the artifices with which experiments have been made for blocking the evacuation of the ureter. They had achieved such a blockage by means of a small balloon introduced into the bladder by means of a semirigid catheter. By this means the speakers have achieved a complete and perfect injection of all the superior urinary passages from the smallest details of the calices to the retrovesical portion of the ureter, visible through the air contained in the balloon. The pressure is from 40 to 80 mm. of mercury. The use of this method is no more difficult than when using a common catheter; its advantages were demonstrated by roentgenograms presented by the speakers.

BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, July 15, 1947.

Duration of Life After Coronary Thrombosis

Dr. Jairo Ramos, professor of medicine at the Paulista Medical School of São Paulo, published a study of 100 patients who had been stricken with acute coronary thrombosis. The age of 1 patient at the moment of the attack was 35 years, of 36 patients from 36 to 50, of 41 patients from 51 to 60, of 17 patients from 61 to 70 and of 5 patients 71 and more years. At the moment of the attack the average age of the male patients was 50 years and that of the female patients 64 years. Of the 100 patients 28 died, 4 immediately after the attack, 7 a few months later, 13 between one and three years later and 4 between four and eight years after the attack. Of 72 patients alive at the moment of the study, 39 were living from a few months up to three years, 20 between four and five years and 13 from six to fourteen years. The study of the clinical picture of these patients disclosed six types: 20 patients did not present any symptoms after the attack; 18 patients complained only of pain; 9 patients presented only effort dyspnea; 18 patients presented pains and effort dyspnea; 31 patients presented continuous cardiac failure; 4 patients died from the first attack. Hypertension was present and aggravated the condition in 31 per cent of the patients. The number of patients who died from a second attack was five times as large as the number of those who died from the first. Dr. Ramos's conclusions are that advanced age, cardiac failure, hypertension and a new attack were the most important factors in the duration of life after the first attack.

Tyrothricin as a Means of Purifying Antivariolic Vaccine

After encouraging results obtained by the use of penicillin for the purification of antivariolic vaccine, Dr. Cassio Miranda, head of the Virus Division of the Oswaldo Cruz Institute, Rio de Janeiro, decided to try tyrothricin for a similar purpose. He used tyrothricin (Parke-Davis, for research work) dissolved in a 1 per cent concentration in 95 degree alcohol, this solution diluted in glycerin 1:9, or a final concentration of 1/1,000 of tyrothricin. The glycerinated vaccine pulp was then mixed with the tyrothricin solution in variable proportions: sample 1 had 4 cc. of pulp to 1 cc. of tyrothricin solution, sample 2 had 3 cc. of pulp to 1 cc. of the drug, sample 3 had 2 to 1 and sample 4 had 1 to 1. Sample 5 was glycerinated vaccine pulp without tyrothricin.

For the determination of tyrothricin's action on the associated bacterial flora of the vaccine, amounts of 0.05 cc., 0.1 cc., and 0.2 cc. of samples 1, 2, 3 and 4 were added to 15 cc. of nutrient agar melted at 45 C. in twelve separate incubation plates. Three more plates respectively received 0.05, 0.1 and 0.2 cc. of vaccine pulp without tyrothricin, and all the fifteen plates were incubated at 37 C. for forty-eight hours. Examination of the colonies showed a progressive decrease of the bacterial flora in the different samples of pulp (1, 2, 3 and 4) containing tyrothricin, while in sample 5 (vaccine pulp without tyrothricin) the number of colonies was not reduced. In samples 1 and 2, in spite of the reduction of germs, the number of colonies was still practically incalculable. But in sample 3 (2 parts of glycerinated pulp to 1 part of tyrothricin solution) the plate with 0.2 cc. showed only 1,076 colonies, and in sample 4 (1 part of pulp to 1 part of solution) the plate with 0.2 cc. showed only 49 colonies. Skin inoculation in rabbits demonstrated in all the samples the perfect resistance of the vaccine virus to tyrothricin. The vaccine virus resisted during eighty-five days the antibiotic action, giving positive reactions even in the dilution of 1:1,000.

Tuberculosis of the Female Genitalia

Dr. Arnaldo de Moraes, professor of clinical gynecology at the University of Rio de Janeiro, presented 8 cases of tuberculosis of the female genitalia registered among the last thousand consecutive patients attended in the gynecologic department of the Moncorvo Filho Hospital. The 8 cases were 2 of salpingitis, 2 of endometrio-annexitis, 1 of pelviperitonitis, 1 of salpingo-oophoritis, 1 of endometritis and 1 of cervicitis. In all those cases the provisional diagnosis was made on the basis of the clinical history and the physical examination (e. g. adnexal inflammatory process, amenorrhea, precarious general condition). But the final diagnosis was always made through the microscopic examination (endometrial biopsy or pathologic examination of material removed at operation). The low age of all the patients is worthy of note: 19, 20, 20, 23, 24, 25, 26 and 35 years.

Brief Items

Dr. R. David de Sanson, professor at the University of Rio de Janeiro, has been elected president of the National Academy of Medicine.

The fourth Brazilian Congress of Cardiology will be held in September at Salvador, state of Bahia.

Correspondence

CHOLESTEROL IN THE DIET AND CORONARY DISEASE

To the Editor:—In THE JOURNAL August 2, page 1197, Dr. William Dock commented on my recommendation in THE JOURNAL of June 7 for a soft diet, including eggs, during the immediate recovery period from myocardial infarction. My recommendation is designed for the immediate recovery period and not as a long range program of management. During that limited period it appears inconceivable that a blood cholesterol level could be altered by the strict limitation of ingested cholesterol.

In the dietary program for myocardial infarction used in my hospital service for the last three years there is a paragraph which reads "after two or three days of this soft diet the indications are to limit the amount of fat, not only because it increases gastric emptying time, but also because there is often a disturbance in cholesterol metabolism associated with coronary disease." It is my established policy to keep people with chronic coronary disease on a low fat intake and to limit their cholesterol intake by advising but one egg a day.

I discussed this problem in a paper entitled "Thoughts on the Prevention of Coronary Disease" (*J. Missouri M. A.* **39**:162 [June] 1942). I have noted the tendency to high cholesterol blood levels in the average middle aged coronary subject and therefore advise these patients to partake not only of a low caloric diet but one particularly low in fats and cholesterol rich substances, such as egg yolks. There is a difference between a dietary program suitable for a short period of convalescence from an acute myocardial infarction and a long-term plan of dietary control designed to defer the further development of atherosclerotic changes.

O. P. J. FALK, M.D., St. Louis.

STREPTOMYCIN TOXICITY

To the Editor:—In the article on Streptomycin Toxicity by my associates and myself in THE JOURNAL, June 21, a statement was made that the highly purified streptomycin used in the study was first crystallized in the form of the calcium chloride double salt and "then converted by mild treatment to the sulfate to ensure stability."

It has been brought to my attention that it might be inferred from this statement that the calcium chloride double salt of streptomycin is less stable than the highly purified sulfate. It was not intended to convey any such impression; I am reliably informed that no significant difference exists in the stabilities of these two salts of streptomycin.

WALSH MCDERMOTT, M.D., New York.

MONGOLISM

To the Editor:—In an editorial in THE JOURNAL, July 26, the statement is made that mongolism is congenital but not hereditary. You urge that physicians be on the watch for a history of infections in the mother. Frequently a mother gives birth to twins with but 1 of them affected. One must conclude that infection was not the cause, since it would have affected both twins, or that the twins responded differently to a common stimulus. In that even the differential response is traced back almost inevitably to genetic factors.

Although direct hereditary descent from parent to child is not known in mongolism, the evidence derived from a study of twins is strongly in favor of there being a genetic factor for mongolism. In all instances in which twins have exhibited mongolism in one or both of the members of the pair, monozygous twins always show both affected, and dizygous twins almost always show but 1 affected. There are 4 instances of dizygous twins reported with both affected. This is not to be wondered at, as there are a number of families on record in which several sibs have mongolism, two families at least with 3 mongoloid children each. The sharp separation of monozygous twins from dizygous twins with the monozygous falling into the group of both affected, and dizygous for the most part into the group with but 1 affected, speaks strongly for a genetic basis for the condition. This is exactly what would be expected if mongolism, which so seldom shows familial distribution, were based on genetic factors. This does not preclude extrinsic factors from playing a role also.

MADGE T. MACKLIN, M.D., Columbus, Ohio.
Research Associate, Ohio State University.

TOXIC ACTION OF EMETINE HYDROCHLORIDE

To the Editor:—With regard to the editorial comment "Toxic Action of Emetine Hydrochloride on the Heart" in THE JOURNAL July 19, it may be pertinent to recall my article in the *Journal of Chemotherapy* in January 1929 entitled "Treatment of Chronic Human Amebiasis," in which I wrote "We have come to feel that the best criterion for the limit of tolerance in giving ipecac, and more particularly emetine hydrochloride, is pulse rate, and that administration of the drug must cease entirely if the pulse reaches a rate of 100 to 110 per minute while the patient is ambulatory."

For some years I have tried to keep the pulse rate under 90 per minute each day and the period of daily dosing within two weeks. If the patient tends to be "intolerant" of emetine hydrochloride according to such controls, I stop it entirely. Then no new attempt is made to use this drug for an interval of three to four months.

In my opinion pulse rate is a valuable guide in the administration of emetine hydrochloride.

LUTHER M. BOYERS, M.D., Berkeley, Calif.

DESTRUCTIVE CHANGES PRODUCED BY RADIUM AND ATOMIC ENERGY

To the Editor:—I note that a medical board has been appointed to give medical guidance to the various developments in the field of atomic energy. I should like to bring to your attention that in 1936 the American Medical Association Committee on Therapeutic Research, Council on Pharmacy and Chemistry, gave a grant to the Long Island College of Medicine so that I could produce in animals the destructive changes to the tissues that result from the ingestion of radioactive substances (radium poisoning). Although treatment to reverse this deadly process was our primary problem, all our animals died before the therapeutic plan could be instituted. Recently reviewing our original report published in the *American Journal of the Medical Sciences* in May 1936, and comparing it with the animals exposed to the destructive effects of atomic energy at Bikini Atoll, at present under study by the United States Navy Medical Corps and reviewed at the Centennial meeting of the American Medical Association at Atlantic City, I was greatly impressed with the obvious similarity of the destructive processes.

EDWIN J. GRACE, M.D., Brooklyn.

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Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and the Examining Boards in Specialties were published in THE JOURNAL, Aug. 30, page 1565.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 22-24, 1948. Sec., Dr. D. G. Gill, 519 Dexter Ave., Montgomery 4.

ARIZONA: * *Examination.* Phoenix, Oct. 7-8. Sec., Dr. J. H. Patterson, 826 Security Building, Phoenix.

ARKANSAS: * *Examination.* Texarkana, Nov. 6-7, 1947. Sec., L. J. Kosminsky, Texarkana. *Eclectic.o* Little Rock, Nov. 6. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Written.* Los Angeles, Aug. 25-28. *Oral.* Los Angeles, Nov. 8-9. Sec., Dr. Frederick N. Scatena, 1020 N. St., Sacramento 14.

COLORADO: * Denver, Oct. 8-11. Final date for filing application is Sept. 20. Sec., Dr. J. B. Davis, 831 Republic Bldg., Denver 2.

CONNECTICUT: *Examination.* Hartford, Nov. 11-12. Sec., Dr. Creighton Barker, 258 Church St., New Haven.

DELAWARE: *Examination.* Dover, Jan. 13-15. *Endorsement.* Dover, Jan. 20. Sec., Dr. J. S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: * *Endorsement.* Washington, Sept. 8. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6012 Municipal Bldg., Washington.

FLORIDA: * *Examination.* Jacksonville, Nov. 25-26. Sec., Dr. Harold D. Van Schaick, 6675 Windsor Lane, La Gorce Island, Miami.

GEORGIA: Atlanta, Oct. 14-16. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

IDAHO: Boise, Jan. 13-15. Sec., Miss Estella S. Mulliner, 355 State Capitol Bldg., Boise.

ILLINOIS: Chicago, Oct. 14-16. Supt. of Registration, Dept. of Registration and Education, Mr. Philip M. Harman, Springfield.

INDIANA: *Examination.* Indianapolis, June 1948. Sec., Board of Medical Registration and Examination, Dr. Paul R. Tindall, K of P Bldg., Indianapolis.

KANSAS: Topeka, Dec. 3-4. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: *Examination.* Louisville, Sept. 22-24. Sec., State Board of Health, Dr. P. E. Blackerby, 620 S. Third St., Louisville 2.

MAINE: Portland, Nov. 12-13. Sec., Dr. A. P. Leighton, 192 State Street, Portland.

MARYLAND: *Medical Examination.* Baltimore, Dec. 9-12. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore. *Homeopathic Examination.* Baltimore, Dec. 9-10. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: *Examination.* Boston, Nov. 18-21. Sec., Dr. H. Q. Gallupe, 413-E State House, Boston.

MINNESOTA: * St. Paul, Sept. 3-5. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI: *Endorsement.* Jackson, Dec. 1947. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Helena, Oct. 6-8. Sec., Dr. O. G. Klein, First National Bank Bldg., Helena.

NEVADA: Carson City, Nov. 3. Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.

NEW HAMPSHIRE: Concord, Sept. 11-12. Sec., Board of Registration in Medicine, Dr. John S. Wheeler, 107 State House, Concord.

NEW JERSEY: *Examination.* Trenton, Oct. 21-22. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, Oct. 13-14. Sec., Dr. LeGrand Ward, 141 E. Palace Ave., Santa Fe.

NEW YORK: *Examination.* Albany, Buffalo, New York and Syracuse, Oct. 6-9, 1947. Sec., Dr. Jacob L. Lochner, Jr., Education Bldg., Albany.

NORTH DAKOTA: * Grand Forks, Jan. 6-9. Sec., Dr. G. M. Williamson, 415 S. Third St., Grand Forks.

OKLAHOMA: *Endorsement.* Oklahoma City, Oct. 28-29. Sec., Dr. F. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

OREGON: * *Endorsement.* Portland, Oct. 17-18. Exec. Sec., Miss L. M. Conlee, 608 Failing Bldg., Portland.

PENNSYLVANIA: *Examination.* Harrisburg, Jan. 1948. Acting Sec., Board of Medical Education and Licensure, Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

RHODE ISLAND: * *Examination.* Providence, Oct. 2-3. Chief, Division of Professional Regulation, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, Nov. 10-12. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA: * Pierre, Jan. 20. Sec., State Board of Health, Dr. Gilbert Cottam, Capitol Bldg., Pierre.

TEXAS: San Antonio, Nov. 12-14, 1947. Sec., Dr. T. J. Crowe, 918-20 Texas Bank Bldg., Dallas 2.

UTAH: *Reciprocity.* Oct. 8. *Examination.* Salt Lake City, June, 1948. Asst. Dir., Department of Registration, Miss Rena B. Loomis, 324 State Capitol Bldg., Salt Lake City.

WEST VIRGINIA: *Examination.* Charleston, Oct. 2-4. Commissioner, Public Health Council, Dr. N. H. Dyer, State Capitol, Charleston.

WYOMING: *Examination.* Cheyenne, Oct. 6. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: Sept. 16. Sec., Mr. Francis A. Roy, Science Hall, University of Arizona, Tucson.

ARKANSAS: *Examination.* Little Rock, Oct. 7. Sec., Mr. L. E. Gebauer, 701 Main St., Little Rock.

COLORADO: *Examination.* Denver, Sept. 17-18. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

DISTRICT OF COLUMBIA: *Examination.* Washington, Oct. 20-21. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6012 E. Municipal Bldg., Washington.

FLORIDA: *Examination.* Gainesville, Nov. 1. Final date for filing application is Oct. 16. Sec., Dr. W. M. Emmell, University of Florida, Gainesville.

IOWA: Des Moines, Jan. 13, April 13, July 13, Oct. 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MICHIGAN: *Examination.* Ann Arbor and Detroit, Oct. 10-11. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

MINNESOTA: *Examination.* Minneapolis, Oct. 7-8. Sec., Dr. Raymond N. Bieter, 105 M. Hall, University of Minnesota, Minneapolis.

NEBRASKA: *Examination.* Omaha, Oct. 7-8. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, State Department of Health, Room 1009, State Capitol Bldg., Lincoln 9.

OKLAHOMA: Spring 1948. Sec., Dr. Frank Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

TENNESSEE: *Examination.* Memphis, Sept. 18-19. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.

WISCONSIN: *Examination.* Madison, Sept. 27. Final date for filing application is Sept. 20. Sec., Mr. William H. Barber, Watson and Scott Sts., Ripon.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Food and Drug Acts: Application of Federal Act to Intrastate Sales.—The defendant, doing business as Sullivan's Pharmacy, was convicted of violating the Federal Food, Drug and Cosmetic Act and he appealed to the Circuit Court of Appeals, Fifth Circuit.

Between November 1943 and March 1944 Abbott Laboratories, doing business in North Chicago, Ill., shipped in interstate commerce to Abbott Laboratories, at Atlanta, Ga., a number of boxes containing bottles of drugs, one of them being a bottle of 1,000 tablets of sulfathiazole, which was duly labeled with a caution that they were to be used only by or on the prescription of a physician and with the name and Chicago address of Abbott Laboratories. This bottle was in September 1944, sold to Sullivan and by him transferred, in intrastate commerce, to his pharmacy in Columbus and placed on his shelves for retail sales to customers. In December two lots of twelve tablets each were taken from the bottle, placed in pasteboard pill boxes with only the word sulfathiazole (slightly misspelled) on them and sold to federal inspectors. The label on the bottle was not defaced or changed and the bottle was seen and afterward taken in charge by the inspectors.

The defendant contends that the Federal Food, Drug and Cosmetic Act was not intended to operate on retail sales over the counter after interstate commerce has ended, by one who was not the importer; that the language is not clear enough to make criminals of such sellers; and that if construed to apply to them the act is, to that extent, beyond the power of Congress.

The only interstate commerce here involved, said the court, is the transportation of bottles of drugs in boxes from Chicago to Atlanta at least nine months before the sales to the government inspectors. The boxes came to rest in Atlanta, were opened by the importer, Abbott Laboratories, and the bottles were put in their stock of drugs in Atlanta for sale. Over six months later Sullivan bought one bottle, which is conceded to have been duly labeled, and put it into his stock of drugs at Columbus for retail sales, where the bottle stayed for another three months before being broken open. If the criminal provisions relied on apply here, they apply to all intrastate sales of imported drugs after any number of intermediate sales within the state and after any lapse of time as well as to similar retail sales of foods, devices and cosmetics, for all these are equally covered by these provisions of the act. We are not able to

conclude, said the court, that the act is to be so construed as to bring within these penal provisions most of the sales in all drugstores, beauty parlors, barber shops and retail grocery stores in the United States.

The general purpose of the act is declared in its simple title: "An Act to prohibit the movement in interstate commerce of adulterated and misbranded food, drugs, devices, cosmetics and for other purposes." Sullivan clearly did not receive in interstate commerce any misbranded drug, said the court, nor did he proffer delivery of any in interstate commerce. A moderately strict construction of this penal provision would confine it to shippers and importers in interstate commerce. Sullivan was a party to intrastate sales only. Section 301 (K), however, prohibits "the alteration, mutilation, destruction, obliteration or removal of the whole or any part of the labeling of, or the doing of any other act with respect to, a food, drug, device or cosmetic, if such act is done while such article is held for sale after shipment in interstate commerce and results in such article being misbranded." The labeling here was not removed or mutilated, but an act was done with respect to the drug, to wit, the removal of some of it from the labeled bottle and the placing of it in a box not sufficiently labeled under the act, after shipment in interstate commerce and while the drug was held for sale, so that this portion of the drug became misbranded. Therefore in their broadest possible sense these words may include what happened. But we are of opinion, concluded the court, that they ought not to be taken so broadly, but applied only to the holding for the first sale by the importer after interstate shipment. Since importation by merchants of all merchandise is for the very purpose of sale, the importation, as has always been held, remains incomplete till its purpose is thus realized. The words of subsection (k) "held for sale after shipment in interstate commerce" naturally refer to this first sale by the merchant importer. The attempt here made by the prosecution is to extend subsection (k) so as to make criminal all retail sales from the interstate package, though made clearly in intrastate commerce, unless the label on the interstate package which has been broken be reproduced on the retail package. We believe no grocer or druggist thus breaking an interstate package for a retail sale has understood this was necessary, and it is said this case is the first effort to apply the federal act in this way. If the "holding for sale" is held to refer to all would-be sellers, no matter where or when or in what quantities, of all foods and drugs and cosmetics which at some time had moved in interstate commerce, the field of enforcement of the act will be multiplied many times. The reason urged for so expanding it, the protection of ultimate consumers, only makes another difficulty; for while Congress may regulate interstate commerce to any extent and almost for any purpose it thinks proper, this extended application would be really a direct regulation for police purposes of what is plainly intrastate commerce, the peculiar province of the state.

Nor did the state of Georgia neglect her duty. Under the provisions of the dangerous drug act derivatives and compounds of sulfanilamide are regulated and it appears that Sullivan violated such act. It would seem that the federal inspectors should have reported such violations to the Georgia inspectors. It is probable that other states have similar laws, reducing the need for Congress to interfere thus in intrastate commerce, if it has the power.

In passing this act, Congress indicated that its main and direct concern was with "the movement in interstate commerce." Until that movement is complete and the importer has sold his original packages the state cannot interfere. Congress regulated what the Constitution directly authorizes. That is no indication of any intention to regulate intrastate commerce because of any burdensome effect on interstate commerce. It is a general rule of statutory construction that as between two possible interpretations of a statute, by one of which it would be unconstitutional and by the other valid, our plain duty is to adopt that which will save the act. Applying this doctrine, the Court of Appeals, instead of holding the pertinent provision of the act unconstitutional as being an invasion of state rights, held that the proper construction was to limit the application of section 301 (k) to the first sale by the importer after interstate commerce. Accordingly the judgment of conviction was reversed.—*Sullivan v. United States, 161 F. (2d) 629 (1947).*

Medical Motion Pictures

FILM REVIEWS

No Help Wanted. Produced in 1946 for the American Legion by the National Association of Mutual Casualty Companies. 16 mm., black and white, sound, 750 feet (one reel). Showing time eighteen minutes. Procurable on loan from American Mutual Alliance, 919 North Michigan Avenue, Chicago 11.

This film tells the story of the problems faced by the disabled veteran of World War II in his effort to make a place for himself in American business and industry. It is intended to appeal to (1) employers, (2) the veterans themselves and (3) community conscious organizations. The picture is dedicated to the proposition that disabled veterans and others with physical handicaps are employable and that their employment is consistent with sound insurance principles.

As the picture opens, one senses a feeling of our tremendous postwar industrial economy. Men at work in radio shops, at the draftsman table and in the machine shop and laboratory views lead one to realize that we live in epochal times. Basket weaving days are over.

As the picture progresses "separation day" arrives, the "Purple Heart veteran" returns home and is introduced to a civilian job. Job analysis, plus proper placement, is the answer. Matching the man to the job is in keeping with the highest traditions of our great American industries. Industrial America, in peace as in war, continues to lead the world. The ever increasing tempo of American living is in the film. By the time the film ends, one is convinced that again Medicine has changed the outlook on life.

No Help Wanted is definitely geared for a wide and enthusiastic response.

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The Advent of Anesthesia. 16 mm., black and white, sound, 325 feet (one reel). Showing time nine minutes. Photographed in 1933 in the "Ether Dome" of the Massachusetts General Hospital; reedited in 1946. Produced and Procurable from Mallinckrodt Chemical Works, St. Louis 7.

This interesting documentary film depicts in a dignified manner the first public demonstration of ether anesthesia on Oct. 16, 1846 by Dr. William T. G. Morton while Dr. John Collins Warren removed a tumor of the neck from Gilbert Abbot. The narrator gives due credit to the previous work of Dr. Crawford Long. The use of the original operating chair, a replica of the original ether inhaler, authentic costumes and accurate portrayal of the surgical technics of that period makes this a realistic film. The photography is excellent.

This film should be of value in the teaching of the history of medicine to undergraduate students. It would also be of interest to any group of physicians when brief historical films are desired. When a film is desired for presentation of medical subjects to lay groups, this production would have real value.

Craniotomy. Prepared in 1944 by Harold C. Voris, M.D., Loyola University Medical School. 16 mm., color, silent, 1,600 feet (four reels). Showing time sixty-five minutes. Procurable from Photographic Department, Loyola University Medical School, 706 South Wolcott Street, Chicago 12.

This film is entirely a technical film concerned with craniotomy by various technics. The first part deals with a routine exploration in a case of jacksonian epilepsy which unfortunately was negative. The two other sections of the film show the technic of what has been described as the Naffziger type bone flap, in which the scalp is first reflected and a bone and muscle flap are turned together. The exploration in this case was for an adamantinoma.

A third section of the film deals with a frontal exploration for removal of the roof of the orbit presumably for persistent exophthalmos. The technic would be of interest to medical students and perhaps to practitioners. It would not be of particular interest to neurologic surgeons. The photography is good.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1937 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Ophthalmology, Cincinnati

30:537-694 (May) 1947

Pigmented Tumors (the De Schweinitz Lecture). A. B. Reese.—p. 537.
Treatment of Retinitis Pigmentosa, with Special Reference to Filatov Method. D. M. Gordon.—p. 565.
Peripheral Visual Acuity: Special Reference to Scotopic Illumination. J. Mandelbaum and L. L. Sloan.—p. 581.
Effect of Electric Stimulation on Ocular Tension. P. B. Zaretskaya. —p. 589.
Ocular Manifestations of Mumps: Case of Mumps Keratitis. J. Fields. —p. 591.
Primary Glaucoma and Pituitary-Diencephalic System. H. Zondek and Gerda Wolfsohn.—p. 596.
Psychology of the Squinter. A. E. Stromberg.—p. 601.

American Journal of Public Health, New York

37:499-640 (May) 1947

Maternity and Child Welfare in Large British City. Jean M. Mackintosh.—p. 499.
Regulation of Housing: Hints for Health Officers. C. S. Ascher.—p. 507.
Ideal Intake of Calories and Specific Nutrients. F. J. Stare.—p. 515.
Effect of Restricted Feeding on Aging and Chronic Diseases in Rats and Dogs. C. M. McCay.—p. 521.
*Effect of Ultraviolet Irradiation of Classrooms on Spread of Measles in Large Rural Central Schools: Preliminary Report. J. E. Perkins, Anne M. Bahlke and Hilda F. Silverman.—p. 529.
Use of Census Tracts in Analysis of City Health Problems. H. W. Green.—p. 538.
Correlation of Laboratory and Clinical Evidence of Virulence of Corynebacterium Diphtheriae. M. Frobisher Jr., Elizabeth I. Parsons and Elaine Updyke.—p. 543.
*Present Recommendations Concerning Treatment and Prophylaxis of Diphtheria. F. H. Top.—p. 549.
Water Supply: Report of the Committee on Water Supply. C. R. Cox. —p. 555.
Epidemic of an Acute Meningoencephalitis in Giles County, Tennessee: Unusual Disease. W. C. Humbert, C. B. Tucker, K. T. Mosley and L. K. Bishop.—p. 564.

Effect of Ultraviolet Irradiation of Classrooms on Spread of Measles.—Perkins and his co-workers say that studies made in the past nine years in Philadelphia and its suburbs on the effect of ultraviolet irradiation of classrooms on the spread of measles, chickenpox and mumps in school children suggested that such irradiation has reduced the spread of these diseases, particularly measles, in the classrooms studied. Similar experiments have been undertaken in three rural centralized schools in upstate New York. Observations in these experiments did not begin until January 1945. An extensive measles epidemic in the winter of 1945-1946 makes this report possible. There were indications that ultraviolet lights in the classrooms modified the spread of measles in the classrooms. Further experimental investigation is needed.

Treatment and Prophylaxis of Diphtheria.—Top thinks that a progressive decline in diphtheria over the past two decades has had a lulling effect on some communities, with a resultant lukewarmness in diphtheria prevention. At present there is a reawakened interest in diphtheria, stimulated by a slight rise in case incidence. Antitoxin is the agent of choice in the treatment of diphtheria. Prognosis is directly proportional to the day of the disease on which antitoxin is first given, regardless of the type of organism encountered, though the gravis type of infection may be more refractory to treatment. Penicillin is not a substitute for antitoxin but under certain circumstances is an adjunct. Among antigens available for protection against diphtheria, A. P. T. is the agent of choice, given in two doses at intervals of one month to six weeks. In the presence of a declining case and carrier incidence, booster doses of antigen are necessary. Booster doses of A. P. T. are suggested at 2 years of age and again before entering school for the first time. Thereafter an unusual incidence of the disease in the community warrants one in adopting further antigenic stimulation, proceeding with caution and using plain toxoid after the age of 10 to 12 years.

American Journal of Tropical Medicine, Baltimore

27:245-416 (May) 1947. **Partial Index**

Tissue Pathology of Experimental Tsutsugamushi Disease (Sĕrub Typhus) in Swiss Mice and Macacus Rhesus Monkeys and Report of One Human Case Acquired in the Laboratory. J. L. Tullis, I. Gersh, Elizabeth Jenney and others.—p. 245.
New Concepts in Treatment of Relapsing Malaria. J. J. Sapero.—p. 271.
Polyvalent Antigens for Diagnosis of Salmonellosis in Different Climates. O. Felsenfeld.—p. 285.
Attempts to Cultivate Mosquito Phase of Plasmodium Relictum. G. H. Ball.—p. 301.
Clinical Standardization of Pamaquin (Plasmochin) in Mosquito Induced Vivax Malaria, Chesson Strain: Preliminary Report. B. Craige Jr., R. Jones Jr., C. M. Whorton and others.—p. 309.
Determination of Folic Acid Content of Foods Usually Consumed by Patients with Tropical Sprue. J. J. Angulo and T. D. Spies.—p. 317.
Isospora Hominis Infection in Man: Report of Case. Ella L. May. —p. 323.
Treatment of Trichuriasis with "Enseals" of Emetine Hydrochloride. R. B. Burrows, W. G. Morehouse and J. E. Freed.—p. 327.
Piperonyl Butoxide, New and Safe Insecticide for Household and Field. W. E. Dove.—p. 339.
Schistosomiasis Japonica: Report of Its Discovery in Apparently Healthy Individuals. S. S. Leavitt and O. H. Beck.—p. 347.
Tropical Phagedenic Ulcer (Vincent's Ulcer). H. Blank.—p. 383.
Fate of Radioactive Tartar Emetic Administered to Human Subjects: I. Blood Concentration and Excretion Following Single and Multiple Intravenous Injections. F. C. Bartter, D. B. Cowie, H. Most and others.—p. 403.

27:1-128 (May) 1947 (Supplement)

Malaria and Other Insect-Borne Diseases in the South Pacific Campaign, 1942 to 1945: I. General Aspects and Control Measures. P. A. Harper, E. T. Lisansky and B. E. Sasse.—p. 1.
Id.: II. Epidemiology of Insect Borne Diseases in Army Troops. W. G. Downs, P. A. Harper and E. T. Lisansky.—p. 69.
Id.: III. Entomology. P. W. Oman and L. D. Christenson.—p. 91.
Id.: IV. Parasitologic Observations on Malaria in Natives and Troops and on Filariasis in Natives. N. D. Levine and P. Harper.—p. 119.

Archives of Dermatology and Syphilology, Chicago

55:601-740 (May) 1947

Psychosomatic Factors in Dermatoses: Critical Analysis of Diagnostic Methods of Approach. F. E. Cormia.—p. 601.
Acarodermatitis Urticarioides. I. Katzenellenbogen.—p. 621.
Topical Use of Penicillin in Treatment of Pyoderma. B. J. Hoffman. —p. 630.
Hyperkeratosis Penetrans: Report of Case of Probable Variant of Kyrle's Disease. H. L. Arnold Jr.—p. 633.
*Congenital Absence of the Valves in the Veins as a Cause of Varicosities. A. C. Curtis and R. W. Helms.—p. 639.
Treatment of Early Acquired Syphilis with 600,000 Units of Sodium Penicillin. D. C. Smith, W. H. Kaufman and J. C. Shafer.—p. 644.
Relapsing Syphilids of the Genitalia: Persistence of Lesions Seven Months After Serologic Reversion. B. Saenz.—p. 650.
Leishmania Vaccine Test in Leishmaniasis of the Skin (Oriental Sore) Quantitative Experiments. F. Sagher.—p. 658.
Systemic Treatment of Creeping Eruption. J. M. Hitch.—p. 664.
Morbus Moniliformis Lichenoides: Variant Types. A. R. McFarland. —p. 674.
Clinical Experience with an Ointment of Synthetic Coal Tar. T. S. Saunders and W. C. Davis.—p. 683.
Acute Syphilitic Bilateral Total Ophthalmoplegia. A. C. Esposito.—p. 686.

Absence of Valves in Veins as Cause of Varicosities.—Observations of a youth aged 20 with swelling and ulcers of the right leg are illustrative of a congenital absence of valves in the veins of a large section of the venous bed surgically removed from the right inguinal region. The superficial epigastric and pudic branches on removal and inspection had no valves. The conus, which represents the end of the femoral vein, had no valves. The saphenous vein was double—a not uncommon finding. No valves were present in the upper part of its first section. In the upper part of the second section a small, nonfunctioning remnant was present. These congenital abnormalities of valves of the vein are probably only a part of a similar abnormality in other veins not removed. The abnormality could easily explain the presence of varicosities and ulcerations in this patient. Eger and Caser in 1943 maintained that congenital absence of valves in the external iliac and femoral veins might be an important factor in the production

of varicose veins. Curtis and Helms think that too often preexisting thrombophlebitis is assumed to be the etiologic agent of varicose veins. Congenital absence of valves in the larger veins of the femoral and external iliac systems should be considered in young persons.

Archives of Internal Medicine, Chicago

79:475-588 (May) 1947

*Eruptive Fever with Involvement of Respiratory Tract, Conjunctivitis, Stomatitis and Balanitis: Acute Clinical Entity, Probably of Infectious Origin: Report of 20 Cases and Review of Literature. S. N. Soll. —p. 475.
Cirrhosis of Liver with Massive Hydrothorax. D. G. McKay, J. J. Sparling Jr. and S. L. Robbins.—p. 501.
*Stevens-Johnson Syndrome: Report of 9 Patients Treated with Sulfonamide Drugs or Penicillin. D. O. Wright, E. M. Gold and G. Jennings. —p. 510.
Pneumonia in Old Age: Active Immunization Against Pneumonia with Pneumococcus Polysaccharide: Results of a Six Year Study. P. Kaufman.—p. 518.
Primary Carcinoma of Liver: Study of 31 Cases. R. M. Hoyne.—p. 532.
Homologous Serum Hepatitis Following Transfusion. H. S. Ginsberg. —p. 555.
*Intratracheal Penicillin Therapy in Suppurative Bronchiectasis. L. E. Siltzbach.—p. 570.

Eruptive Fever with Involvement of Respiratory Tract, Conjunctivitis, Stomatitis and Balanitis.—This syndrome has been described under a variety of terms, such as eruptive fever with stomatitis and ophthalmia, erythema exudativum multiforme of Hebra, erythema or herpes iris conjunctivae, ectodermosis erosiva pluriorificialis and Stevens-Johnson syndrome. Soll reports observations on 20 cases which were observed in military personnel. The disease is acute, probably infectious, self limited and febrile. Prodromal symptoms in the respiratory tract are followed by lesions of the skin and mucous membrane of the mucocutaneous junctions characterized by vesicles and pseudomembranes and accompanied frequently with fever and occasionally with bronchopneumonia. As regards the pathogenesis, bacteriologic observations are of no significance. There is no evidence that ingestion of drugs is a factor. Because of the prodromes in the respiratory tract and generalized manifestations the disease is regarded as air borne, systemic and probably due to a virus. The various names proposed and used are misleading in that they direct attention almost exclusively to the skin. Erythema exudativum multiforme means little in cases in which dermatologic lesions do not occur. The term "erythema pluriorificialis exudativum" is better in that it refers also to the orifices of the body, but it is too long and has only descriptive meaning. Until the causative agent is found, appropriate naming of the disease will not be possible.

Stevens-Johnson Syndrome.—Wright and his associates point out that the syndrome described by Stevens and Johnson in 1922 was designated as a "new" eruptive fever associated with stomatitis, ophthalmia, cutaneous eruption and constitutional symptoms. The syndrome deserves emphasis because tragic complications of the eyes, consisting of corneal ulceration or panophthalmitis with partial or complete loss of vision, have been frequent. These severe complications of the eyes did not occur in 9 patients treated by the authors with sulfonamides and/or penicillin. Five patients were treated with sulfonamide drugs and 4 patients with penicillin systemically or topically or both. Complete recovery without sequelae occurred in all but 1 case, in which case a mild conjunctivitis developed with slight symblepharon but no corneal involvement. Enthusiasm for any type of therapy in this syndrome must be tempered by the fact that the severity of the clinical course varies greatly and that recovery without complications of the eyes is not uncommon. In 6 of the 9 cases at least one previous attack was experienced without permanent ocular damage.

Intratracheal Penicillin Therapy in Bronchiectasis.—According to Siltzbach the surgical removal of one or more lobes of the lungs is now the accepted treatment for chronic suppurative bronchiectasis. About half the patients with this ailment are unable to undergo operation because their lesions are too extensive or because they are poor surgical risks. In the treatment of 13 patients with chronic suppurative bronchiectasis and 1 patient with suppurative pneumonia, atelectasis and early bronchiectasis intratracheal instillations of penicillin were given. Ten of the 13 patients with chronic bronchiectasis had a drop of 50 per cent or more in the volume of sputum. Three patients had no significant reduction of sputum after the instillations. Recurrence of symptoms was experienced by 4 patients, with a favorable immediate response. Intratracheal penicillin therapy appears to be a useful adjunct in the preparation of patients for lobectomy. It reduces the volume of sputum, renders it less purulent and abolishes the odor. Some patients unsuitable for surgical intervention obtain fairly lasting ameliorative effects from the therapy. One patient with suppurative pneumonia and atelectasis of more than three months' duration experienced immediate and lasting clearing and reexpansion of two lobes after intratracheal instillation.

Archives of Ophthalmology, Chicago

37:561-700 (May) 1947

Intraocular Hemorrhage in Cataract Extraction. W. C. Owens and W. F. Hughes Jr.—p. 561.
*Effect of Training Methods on Color Vision. J. R. Gallagher, E. J. Ludvigh, S. F. Martin and Constance D. Gallagher.—p. 572.
Experimental Studies on Blood-Aqueous Barrier. F. W. Stocker.—p. 583.
Corneoscleral Suture in Operations for Cataract: Special Reference to Incidence of Postoperative Hyphemia. O. S. Lee Jr.—p. 591.
Danger of Penicillin Therapy in Active Uveitis. E. R. Yasuna.—p. 598.
Relative Deficiency of Parasympathomimetic Activity in Aqueous of Eyes with Chronic Simple Glaucoma. S. Bloomfield.—p. 608.
Sensorial Retinal Relationship in Concomitant Strabismus. H. M. Burian. —p. 618.
Hypovitaminosis A in Ophthalmology. R. L. Schmidtke.—p. 653.

Effect of Training on Color Vision.—According to Gallagher and his associates, from 6 to 8 per cent of males are unable to make the proper responses to color vision tests. Efforts have been made to improve the color vision of these subjects. It was believed that many applicants failed the tests because of color ignorance, a condition which would be more amenable to treatment than one attributable to a disorder of color perception. At a boys' preparatory school 701 students were given a color vision test with ten of the American Optical Company's Pseudo-Isochromatic Plates. Deficient color vision was found in 49 (6.9 per cent). These 49 subjects were given training on the test plates. Perfect responses were made after training on the American Optical Company test plates by 45 members of this group, but only 6 made perfect responses to all the plates in the very similar Ishihara test. The scores on a color desaturation test did not improve. A retest on the American Optical Company plates several months later showed considerable diminution in ability to make correct responses. Training apparently does not result in the development of the ability to differentiate colors in all situations and under all conditions with the accuracy and speed possessed by those who have normal color vision.

Archives of Otolaryngology, Chicago

45:503-12 (May) 1947

Streptomycin in Surgical Infections: III. Otitis Externa, Otitis Media, Mastoiditis, Brain Abscess and Meningitis. E. J. Pulaski and C. S. Matthews.—p. 503.
Evaluation of Diagnostic Methods Used in Cases of Maxillary Sinusitis, with a Comparative Study of Recent Therapeutic Agents Employed Locally. S. Burtoff.—p. 516.
Laryngeal Chondroma. R. S. Rosedale.—p. 543.
*Discovery and Evaluation of Otic Cripples. E. P. Fowler Jr.—p. 550.
Unique Case of Foreign Body in Esophagus. V. J. Schwartz.—p. 562.
Operation to Improve Hearing in Cases of Congenital Atresia of External Auditory Meatus. G. L. Pattee.—p. 568.
Otitis Media and Complications. B. R. Dysart.—p. 594.

Discovery and Evaluation of Otic Cripples.—According to Fowler, the deaf and hard of hearing are ignored as compared with other types of cripples. The handicap from blindness or from poliomyelitis is obvious; that from deafness is not. Failure to do tests or the use of antiquated methods has clouded the problem of deafness. The most serious obstacle to the establishment of routine audiometric methods for the screening and measurement of deafness and the establishment of proper standards of compensation has been the insistence of badly informed persons that the old fashioned voice and whisper tests are adequate. This has been the trouble not only in the army, the navy and the air force but also in most schools and in medicolegal courts. The audiometer has come to be recognized among experts as the most reliable standard for testing hearing.

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Fowler evaluates the use of phonograph audiometers, the screening tests for groups, pure tone audiometry, pure tone bone conduction tests and fatigue tests. Spot surveys with the audiometer have indicated that half of the 140,000,000 people in the United States have some impairment of hearing.

Arizona Medicine, Phoenix

4:73-172 (March) 1947

Newer Aspects of Pancreatic Disease. F. Cunha.—p. 97.
Modern Management of Edema. I. P. Stevenson.—p. 105.
Thrombocytopenia with Splenectomy: Case Report. T. W. Woodman and F. J. Milloy.—p. 114.
The Peptic Ulcer Problem. C. F. Dixon.—p. 117.
Thrombosis and the Anticoagulants. O. O. Meyer.—p. 120.
H. Influenzae Meningitis, with Report of Incidence in a Newborn with Recovery. M. C. F. Semoff.—p. 125.
Precancerous Dermatoses. L. G. Jekel.—p. 127.
Studies on Effect of Diluting Fluids on Serologic Titers: II. Comparison of the Titers Obtained When Serums Are Diluted Prior to Inactivation and When They Are Diluted After Inactivation. E. L. Breazeale, T. R. Reusser and L. F. Pierce.—p. 129.

Blood, New York

2:217-310 (May) 1947

*Association of the Guillain-Barré Syndrome with Infectious Mononucleosis: Report of 2 Fatal Cases. W. Ricker, A. Blumberg, C. H. Peters and A. Widerman.—p. 217.
Chronic Neutropenia: Report of Case Not Cured by Splenectomy. P. G. Hattersley.—p. 227.
*Studies on Physiology of the White Blood Cell: Glycogen Content of Leukocytes in Leukemia and Polycythemia. R. Wagner.—p. 235.
Observations on Anemia in Ducks Infected with P. Lophurae. R. H. Rigdon and H. H. Rostorfer.—p. 244.
Dietary Factors Concerned in Erythropoiesis. G. E. Cartwright.—p. 256.

Guillain-Barré Syndrome with Infectious Mononucleosis.—Infectious mononucleosis in which death was due to associated ascending paralysis, indistinguishable from that in the Guillain-Barré syndrome, was encountered by Ricker and his associates in 2 cases at the Army Institute of Pathology. Study of the data from these cases strongly suggests that infectious mononucleosis is one of the many diseases or agents which may precipitate or give rise to the Guillain-Barré syndrome.

Glycogen Content of Leukocytes in Leukemia and Polycythemia.—Wagner reported in a previous paper a procedure for determining glycogen in whole blood and isolated white cells. He applied the method to the study of the glycogen content of whole blood and white blood cells in leukemia and polycythemia. It is concluded from this study that the granulated leukocyte is the only carrier of glycogen in whole blood. The "reducing substances" in lymphocytes and blast cells are not considered to be true glycogen. The glycogen content of wet white blood cells in the rabbit amounts to about 1 per cent. In the human being a range of from 0.17 to 0.67 per cent was calculated. In disease higher percentages occur, in polycythemia up to 1.64 per cent and in glycogen storage disease up to 3.05 per cent.

Bulletin of Johns Hopkins Hospital, Baltimore

80:181-216 (April) 1947

Pulmonary Edema and Pleural Effusion Produced by Acute Alpha-Naphthyl Thiourea Poisoning in Rats and Dogs. H. Latta.—p. 181.
Penile Ulcer Caused by Micrococcus Tetragenus. B. D. Pinck and B. Zheutlin.—p. 198.

Bulletin of New York Acad. of Medicine, New York

23:245-306 (May) 1947

Role of the Academy in the City and Nation. G. Baehr.—p. 245.
Recent Studies on Function of Adrenal Cortex. C. N. H. Long.—p. 260.
Diagnosis and Treatment of Congenital Cyanotic Heart Disease. G. H. Humphreys II.—p. 283.
Studies in New Anticonvulsants. H. H. Merritt and C. Brenner.—p. 292.
Intrinsic Asthma. F. M. Rackemann.—p. 302.

23:307-380 (June) 1947

Social Pathology and New Era in Medicine. J. A. Ryle.—p. 312.
*Carcinoma of Lung: Six Year Study. G. H. Humphreys II.—p. 330.
*Rickettsialpox. M. Greenberg and O. Pellitteri.—p. 338.
Plato and Clementine. H. W. Smith.—p. 352.

Carcinoma of Lung.—Humphreys reports 125 cases of primary bronchogenic carcinoma in 109 men and 16 women between the ages of 34 and 79 admitted to a general hospital service over a six year period. In 83 of the patients diagnosis was made either at necropsy or so late in the course of the disease that no operation was considered justifiable. Of the 42 patients operated on, it was possible to carry out some form of resection in 29. Nine of these died in the postoperative period, a hospital mortality of 31 per cent. Only 3 of the 20 patients surviving resection remained alive without evidence of metastasis, but the lives of those who died of metastasis were prolonged and their symptoms were alleviated. Radiation therapy has not increased the life expectancy of 33 patients treated as compared to those untreated, but in many it has relieved symptoms and in some it has probably prolonged life. Three patients are living and apparently well without physical or economic disability three to four years after pneumonectomy. Early recognition aided by bronchoscopy is the key to successful surgical treatment.

Rickettsialpox.—According to Greenberg and Pellitteri, rickettsialpox is a new disease caused by a heretofore undescribed rickettsia. The clinical characteristic is the occurrence of a triad consisting of an initial lesion, a small papule somewhere on the body, usually without symptoms, followed about a week later by the acute onset of fever, headache, chills, sweats and backache, and thereafter by the occurrence of a papulovesicular rash two to three days after the onset of fever. The duration of illness from the onset of the initial lesion is about three to four weeks. During the acute illness there is a moderate leukopenia, and the sedimentation rate is either normal or slightly elevated. The serums of recovered patients give negative agglutination reactions with Bacillus proteus OX 19, OX 2 and OX K and give positive complement fixation tests for rickettsialpox, using the M. K. strain as antigen. The causative agent of the disease is Rickettsia akari and the vector is a rodent mite, Allodermanyssus sanguineus. There were no fatalities from the disease.

Canadian Medical Association Journal, Montreal

56:595-708 (June) 1947

*Globin Insulin. I. M. Rabinowitch, A. F. Fowler, E. H. Bensley, A. L. Gordon and Marjorie Mountford.—p. 595.
Use of Latin and Metric System in Prescription Writing. R. A. Waud.—p. 605.
*Development of Anastomosis Between Coronary Vessels and a Transplanted Internal Mammary Artery. A. M. Vineberg and Beverly L. Jewett.—p. 609.
Malignant Lymphoma: Cutaneous Symptomatology. D. E. H. Cleveland.—p. 614.
Treatment Based on Diagnosis During Menopause. M. C. Watson.—p. 621.
Practical Guiding Principles for Closed Pneumonolysis. G. A. P. Hurley.—p. 625.
Effects of Galvanic Stimulation on Limb Volume in Nerve Injuries. J. E. Bateman.—p. 627.
Intestinal Parasites Found in Survey of Repatriated Hongkong P. O. W. T. H. Williams.—p. 630.
Pleural Effusions and Tuberculosis. J. F. Paterson.—p. 634.
Social Therapy of Epilepsy. W. G. Lennox.—p. 638.
Cultural Study of Ringworm. C. W. E. Danby and R. Forsey.—p. 641.
Aerosol Therapy. M. Aronovitch.—p. 643.
Challenge of the Young Child. D. V. Hutton.—p. 646.
Fallacies and Control of Respiratory Infections, with Special Emphasis on Influenza. F. S. Brien.—p. 650.
Nonrenal Hypertension. S. M. Friedman and Constance L. Friedman.—p. 655.

Globin Insulin.—According to Rabinowitch and his associates the action of globin insulin is slower than that of unmodified insulin but is more rapid than that of protamine zinc insulin. Acting more rapidly than protamine zinc insulin, it should more effectively control the hyperglycemic response to the ingestion of food. The use of globin insulin in the morning and protamine zinc insulin in the evening appeared to result in a better average control of diabetes than any of the other methods of treatment. The addition of globin insulin to the available insulins for the treatment of diabetes mellitus is fully justified.

Anastomosis Between Coronary Vessels and Internal Mammary Artery.—Beck in 1935 attempted to improve the circulation of the left ventricle by suturing a muscle graft to the surface of the heart. In 1937 O'Shaughnessy tried to bring arterial blood to the left ventricle by suturing the omentum to the ventricular muscle. Fauteux introduced ligation of the vena magna cordis in 1940. In 1946 Vineberg described an anastomosis between the left internal mammary artery and the left

coronary circulation in a dog ninety-nine days after transplantation of the left internal mammary artery into the wall of the left ventricle. Vineberg and Jewett report observations on 10 dogs of which 2 showed a definite communication between the left internal mammary artery and the left coronary circulation. In 8 of the 10 animals the internal mammary artery became partially adherent to the chest wall in its former bed. Distal to this the artery was free for a distance before entering the heart. A constricting scar developed at the junction between the free arterial portion and that part of the artery which readhered to the chest wall. The artery was patent throughout in 5 animals and was patent to the site of the scar and beyond it in 2 animals. In 3 dogs it was patent to the site of the scar but thrombosed beyond it. Work is now in progress to attempt to diminish the frequency of this scar formation.

Cincinnati Journal of Medicine

28:301-386 (May) 1947

*Triweekly Arsenotherapy, a Safe and Effective Ambulatory Treatment Regimen for Early Syphilis. A. L. Weiner.—p. 301.
*Toxic Reactions of Penicillin. E. D. Davis.—p. 321.

28:387-452 (June) 1947

The Nature and Treatment of Arterial Hypertension. I. H. Page.—p. 387.
Cutaneous and Subcutaneous Hemorrhage Simulating Melanoma. L. Goldman.—p. 398.

Triweekly Arsenotherapy for Early Syphilis.—Weiner says that a triweekly method has been employed in the venereal disease clinic of the Cincinnati General Hospital and the Health Center Clinic of the Cincinnati Health Department during the past three years. A total of forty injections of the arsenical and ten injections of bismuth subsalicylate constituted the treatment. The arsenical drug (mostly mapharsen) was given in full dosage of 1 mg. per kilogram of body weight—usually 0.04 to 0.06 Gm.—three times a week for thirteen and one-half weeks, and bismuth subsalicylate in dosage of 1 cc. was given once a week during the first ten weeks. A total of 714 patients have been treated in this manner. Follow-up of these patients indicates that this regimen is safe and effective in primary, secondary and early latent syphilis. This treatment schedule is suggested as a practical office procedure. Penicillin in oil and beeswax alone or in combinations with arsenic and bismuth cannot as yet be recommended for routine use in the treatment of early syphilis.

Toxic Reactions of Penicillin.—Davis has observed several cases of unusually severe and prolonged urticaria occurring in patients undergoing penicillin therapy. Two case histories are presented to illustrate this allergic manifestation. Apparently certain individuals are capable of developing a sensitivity to penicillin either by previous fungous disease or by being in constant contact with the penicillium mold. Penicillin today is used intravenously, intramuscularly, topically (as a powder), locally as an ointment, orally, internally in serous cavities, as an irrigating agent, as an aerosol spray, as rectal suppositories, as an ingredient for vaginal douches and as "cough drops" or lozenges. Since reactions have been known to occur during the past four years when penicillin was in its infancy, we can logically expect more and varied reactions with its wholesale use in the future. Pharmaceutical houses are at present striving to produce penicillin in its purest form. The comparatively low number of reactions occurring during the last quarter of the year suggests that a more highly purified product is now available for use.

Connecticut State Medical Journal, Hartford

11:321-424 (May) 1947

Medicine and National Security. E. L. Bortz.—p. 324.
Pulmonary Sarcoidosis. H. L. Higgins.—p. 330.
Ragweed Pollen Survey in Connecticut. S. W. Jennes.—p. 339.
Connecticut Cancer Record Registry—How It Functions. M. H. Griswold and Eleanor J. MacDonald.—p. 344.
Contribution of Yale University School of Medicine to Connecticut Cancer Program. Mary C. MacDonald.—p. 347.
Use of Glass Button in Treatment of Ascites. A. Hurwitz.—p. 351.
Intern Teaching Program in Small Hospital. J. I. Epstein.—p. 353.
Scarlet Fever Immunizations. C. G. Thompson.—p. 355.
"I Swear by Apollo the Physician." P. R. Hawley.—p. 356.

Florida Medical Association Journal, Jacksonville

33:599-660 (May) 1947

Surgical Lesions of Neck: Aspects of Their Diagnosis and Management. A. C. Williams.—p. 631.
Preliminary Review of Poliomyelitis in Florida. E. G. Riley.—p. 639.
Indications for Tracheotomy. T. M. Irwin.—p. 642.

33:664-738 (June) 1947

President's Address. S. Richardson.—p. 664.
Proceedings of Seventy-Third Annual Meeting of the Florida Medical Association, Held at Miami, April 21, 22 and 23, 1947.—p. 694.

Geriatrics, Minneapolis

2:137-194 (May-June) 1947

Acute Myocardial Infarction. M. D. Altschule.—p. 137.
Diet for the Aged. J. Meyer.—p. 149.
Clinical Differentiation of Senile and Arteriosclerotic Psychoses. D. Rothschild.—p. 155.
*Future of Older Worker. T. Klumpp.—p. 165.
Nitrogen Balance Studies in Elderly People. W. B. Kountz, Lilli Hofstatter and P. Ackermann.—p. 173.
Counseling the Aged. C. deGruchy.—p. 183.

Future of Older Worker.—Klumpp thinks that society has been quite illogical in its attitude toward the older worker. There seems to be no objection to electing and appointing older persons to positions of the greatest responsibility, and yet as far as the rank and file of workers is concerned we have no objection to the imposition of blind and unselective retirement rules. Some persons welcome retirement, and the possibility of retirement on a pension should remain open for these. However, if the premise is that all persons over 65 or 70 are not worth their keep, then least of all should we permit persons above that age to occupy the top and critical positions. Among the principles that should guide the attitude toward the older worker the author mentions the following: Since hiring is selective and based on fitness to do a given job, retirement should likewise be selective and based on unfitness. Since physiologic age is not synonymous with chronologic age, compulsory retirement on a calender age basis should be abandoned. In accord with Carlson's idea, if wage in proportion to performance is recognized as a fundamental principle, the older worker should taper off in industry, just as the young apprentice gradually works himself up in skill and remuneration. If this becomes general practice, the aura of foolish pride which now stands in the way would soon disappear.

Illinois Medical Journal, Chicago

91:217-276 (May) 1947

Carcinoma of Colon. W. H. Cole.—p. 229.
Contributions of Urology to Public Health. H. L. Kretschmer.—p. 239.
Cataract Extraction by the Vacuum Method. O. B. Nugent.—p. 243.
Protein Deficiency: Manifestations, Recognition and Management. W. S. Hoffman.—p. 248.
Meeting Emergency Situation in Epidemic of Diarrhea and Enteritis of the Newborn. E. V. Thieoff.—p. 254.

91:277-330 (June) 1947

Current Progress of Medicine. R. S. Berghoff.—p. 289.
Electric Shock Therapy in Office, Home and General Hospital. S. H. Kraines.—p. 291.
Cryptorchidism: Problem in Surgical Treatment. J. H. Kiefer.—p. 297.
Low Back Pain. S. L. Turek.—p. 300.
Frequently Encountered Heart Conditions. I. Treiger.—p. 303.
Thromboembolic Disease and Pregnancy. F. J. Walsh and A. M. Barone.—p. 305.
Treatment of Neurologic Disorders with Tridione. E. Liebert.—p. 311.
Acute Sinusitis in Children. G. J. Greenwood.—p. 313.
*Is Chemically Preserved Plasma Safe? A Warning! W. D. McNally.—p. 318.

Chemically Preserved Plasma.—McNally points out that most of the plasma in use at present is army and navy surplus plasma furnished by the American Red Cross. This blood plasma contains an antiseptic preservative, which is merphenyl-mercuric borate, N. N. R. This antiseptic contains 59.09 per cent of mercury. The proportion of this organic mercurial is 1 part to 50,000 plasma. This would correspond to 0.309 grain of merphenyl-mercuric borate in 1 unit of 500 cc., or 0.18 grain of mercury. Few physicians and surgeons know that this plasma contains mercury. When the patient is known to have nephritis, not over 2,000 cc. should be given, and in most serious cases without kidney damage 4,000 cc. should not be

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exceeded. In patients with jaundice or recently jaundiced or with cirrhosis of the liver, plasma should not be used in excess of 2,000 cc. McNally cites reports on the problem of mercurial poisoning. Blood plasma preserved with merphenyl-mercuric borate 1:50,000 is safe for patients without nephritis in the amount usually administered.

Indiana State Medical Assn. Journal, Indianapolis

40:395-490 (May) 1947

Outline for Study of Strabismus Cases. Mary Alice Norris.—p. 419.
Report on Industrial Ophthalmology in Evansville, Indiana. W. M. Cockrum, and H. C. Slaughter.—p. 422.
Role of Contact Lens in Conservation of Vision. H. F. Sudranski. —p. 426.
Acute Iritis, including Acute Iridocyclitis and Acute Uveitis. B. N. Lingeman.—p. 428.
Use of Penicillin Locally in the Eye. M. E. Miller.—p. 430.
Treatment of Chronic Suppurative Otitis Media. E. L. Dietl.—p. 434.

40:491-602 (June) 1947

*Atomic Bomb Surface Burns: Clinical Observations Among Prisoners of War Rescued at Nagasaki, Kyushu. J. S. P. Beck and W. A. Meissner.—p. 515.
One Stage Resection of Left Colon Lesions without Colostomy. K. A. Meyer and D. D. Kozoll.—p. 521.
Occupational Adjustment of Psychoneurotic Veterans. H. A. Stellner. —p. 525.
Case of Glomus Tumor. V. F. Tremor.—p. 528.
Electrocardiographic Diagnosis and Prognosis of Recent Coronary Thrombosis or Occlusion. H. N. Middleton.—p. 529.

Atomic Bomb Surface Burns.—Beck and Meissner report observations on 9 Javanese who were among the prisoners of war rescued at Nagasaki. Rays from the activated atomic bomb had produced first, second and third degree thermal burns of the skin. The distribution of the burns was influenced by the position of the body and the wearing apparel of the victim at the time of exposure. It was near the noon hour on a summer day. The men were sweaty and wore as little clothing as possible; 6 men were shirtless; 2 had reduced their trousers to shorts. The body surfaces receiving the rays at right angles were more deeply burned than those receiving them obliquely. A man who had stood in such a position as to have received third degree burns on the summits of his shoulders would show second degree burns on the receding slopes of the chest and arms. The skin lesions had the appearance of ordinary third and second degree thermal burns. The parts of the body covered by the clothing were protected except for small flame-shaped zones of second degree burns. Various explanations have been given to account for these burns, but the most logical one is that the clothing, dampened with perspiration, stuck to the skin at these zones and they were burned because the insulating layer of air between the skin and the fabric was absent. Long thick hair protected the scalp, but the short hair did not protect the temples or less hairy portions of the face. There was no hematologic evidence of injury to the blood forming tissues in these patients.

Journal of Clinical Endocrinology, Springfield, Ill.

7:79-170 (Feb.) 1947

Excretion of Glycogenic Corticoids and of 17-Ketosteroids in Various Endocrine and Other Disorders. E. H. Venning and J. S. L. Browne. —p. 79.
Hyperophthalmopathic Syndrome in Thyroid Disease. K. E. Paschkis and A. Cantarow.—p. 102.
Virilizing Ovarian Tumors. J. Pedersen.—p. 115.
Hypogonadotropic Eunuchoidism: Report of Case with Failure to Respond to Chorionic Gonadotropic Hormone Due to Antihormones. A. Segaloff and W. Parson.—p. 130.
*Addison's Disease Followed for Nine Years: Case Report, with Autopsy. R. C. Moehlig.—p. 134.
Coexisting Myxedema and Hyperparathyroidism: Case Report. M. Kissin and H. Bakst.—p. 152.
Hyperemia AZT and Evaluation of Hyperemia Rat Unit of Chorionic Gonadotropin. B. Zondek and F. Sulman.—p. 159.

Addison's Disease Followed for Nine Years.—Moehlig reports that a man aged 41, who had been followed for nine years and who had had symptoms of Addison's disease for ten years, had been treated with aqueous adrenal cortex extract, vitamin C, salt, implantation of 1,575 mg. of desoxycorticosterone acetate pellets and intramuscular injections of this substance as well as by sublingual administration. The last mentioned method resulted in swelling of the salivary glands and salivation. A change in pigmentation, previously unnoticed, occurred within six months after treatment with adrenal cortex extract and salt. Over a period of nine years there was considerable loss of pigment. It is not asserted that treatment was responsible for this loss of pigment. Several episodes of addisonian crisis occurred, requiring a stepping up of treatment dosage. Failure to take treatment for two weeks resulted in an addisonian crisis from which the patient did not recover. Death was preceded by delirium, fever and hypoglycemia (blood sugar 32 mg.). At necropsy no adrenal tissue was found anywhere. It was suggested that, as a maternal aunt had died of Addison's disease (verified at necropsy) and a niece was developing pigmentation, an adrenal anlage defect was postulated. The changes found at necropsy in the pituitary, thyroid and other organs are recorded.

Journal of Immunology, Baltimore

56:1-96 (May) 1947

Appearance of Sheep Cell Lysins and Human A Cell Agglutinins in Rabbit Immunized with Partially Purified Blood Group A-Specific Substance from Hog Gastric Mucin. D. H. Brown, E. L. Bennett and C. Niemann.—p. 1.
Bacterial Warfare: Critical Analysis of Available Agents, Their Possible Military Applications, and Means for Protection Against Them. T. Rosebury and E. A. Kabat.—p. 7.

Journal Industrial Hygiene & Toxicology, Baltimore

29:145-200 (May) 1947

*Lung Changes Associated with the Manufacture of Alumina Abrasives. C. G. Shaver and A. R. Riddell.—p. 145.
Experiences with Polarographic Methods in Controlling Lead Hazard in Brass Foundries. H. J. Weber.—p. 158.
Simultaneous Determination of Lead and Zinc in Atmospheric Samples: A Polarographic Method Utilizing Double Internal Standard. A. S. Landry.—p. 168.
*Cryolite as a Detoxifying Agent for Lead Arsenate on Plants and Animals. S. Marcovitch.—p. 175.
A Comparative Study of the Lead Content of Street Dirts in New York City in 1924 and 1934. S. Kaye and P. Rezinikoff.—p. 178.
Effect of Protein and Carbohydrate Intake on Liver Injury Produced in Dogs by Carbon Tetrachloride. V. A. Drill, T. A. Loomis and J. Belford.—p. 180.
Acute and Chronic Toxicity of Methyl Chloride: Hematology and Biochemical Studies. W. W. Smith.—p. 185.
Acute Toxicity and General Systemic Actions of Diethylene Glycol Monoethyl Ether (Carbitol). P. J. Hanzlik, F. P. Luduena, W. S. Lawrence and H. Hanzlik.—p. 190.
Radioactive Emanations: Nature, Mechanism of Action, Biologic Effects and Tolerance Limits. B. N. Craver.—p. 196.

Lung Changes Associated with Manufacture of Alumina Abrasives.—The disease described by Shaver and Riddell was first observed by Shaver in a young man who had been employed for eight years manufacturing an abrasive the main ingredient of which is bauxite. His chest roentgenogram disclosed a peculiar type of shadow together with a pneumothorax which had developed spontaneously. The x-ray appearances did not conform to the shadow patterns associated with lung fibrosis. When similar cases appeared, the process was investigated and 344 persons who had been exposed were investigated. Thirty-five of these had radiologic evidences of disease, and there were 13 others with lung changes classified as doubtful. The disease has been fatal in 7 instances. In several it has progressed rapidly and has produced serious disability. The cases reported by the authors apparently developed during the period when the process was accelerated for war production and the exposure increased. Cases observed in Germany seem to have occurred under similar circumstances of increased production. The disease is essentially an interstitial lung fibrosis, non-nodular in type. It may be rapidly progressive. Profound emphysema accompanies the invading fibrosis. Emphysematous blebs and bullae occur on the visceral pleura. These are apt to rupture spontaneously and give rise to pneumothorax. The etiology is doubtful, but it is known that the process involves exposure to high concentrations of alumina and silica, both in a very fine state of division, and to small quantities of many other substances.

Cryolite as Detoxifying Agent for Lead Arsenate on Plants and Animals.—Lead arsenate when used extensively, as in the Northwest apple belt, produces soil poisoning. As much as 180 pounds of lead arsenate per acre may be applied in a single season, or 1,800 pounds in a ten year period. In that

area cryolite also is used on apples especially in the later sprays. Lead arsenate is known to accumulate in the soil sufficiently to interfere with crop growth. The addition of cryolite at the rate of 5,000 parts per million prevented the death of white rats when fed a diet in which 2,500 parts per million of lead arsenate was incorporated. When added to soil cryolite likewise warded off the injurious effects on beans of lead arsenate additions.

Journal of Investigative Dermatology, Baltimore

8:227-274 (May) 1947

Propylene Glycol Dipropionate (New Fungicide): Preliminary Report. E. S. Bereston.—p. 227.
Use of Hormones in Dermatology. M. M. Hartman.—p. 229.
*Treatment of Dermatitis Venenata (Rhus) by Cryotherapy: Preliminary Report. M. M. Robinson.—p. 239.
Effect of Hormones on Growth of Trichophyton Purpureum and Trichophyton Gypseum. F. Reiss.—p. 245.
Effect of Sex Hormones on Experimental Trichophyton Purpureum Infection in Rabbits. F. Reiss.—p. 251.
Local Sensitization of Skin to Grenz Rays by Bergamot Oil. M. Oppenheim.—p. 255.
"Compound" and Grouped Hairs of Human Scalp: Their Possible Connection with Follicular Infections. L. J. A. Loewenthal.—p. 263.

Cryotherapy for Dermatitis Venenata (Rhus).—Robinson employed refrigerants in the treatment of 101 persons who had dermatitis venenata caused by contact with plants of the Rhus family. One of these patients was treated with liquid air, 4 with solidified carbon dioxide and 96 by spraying with ethyl chloride. Liquid air produces faster results, but the handling of this substance is so difficult that its substitution for ethyl chloride is not warranted. Carbon dioxide was not quite as effective as liquid air, and its action was a little more difficult to control. Ethyl chloride produced good results without untoward side effects. Patients in whom the eruption was in the vesicular stage or in the early papular stage were treated. Severity of the cases varied from an isolated patch of vesicles on the arm or leg to the generalized form which is accompanied by fever. The vesicles dried up, the areas exfoliated and the skin healed in a relatively short time. In the majority the average duration of the disease was five days and the average number of treatments was three at twenty-four hour intervals. The extremely mild cases were often cured with one or two sprayings. Failure occurred in only 5 cases. It is suggested that frosting of the skin produces ischemia of the affected area and causes rupture of the vesicular wall with discharge of its contents. Results seem to indicate that this method of treatment may have a diversified use in vesicular dermatosis.

Journal of the Mount Sinai Hospital, New York

14:1-70 (May-June) 1947

*Evaluation of Dietary Factors in Treatment of Laënnec's Cirrhosis of Liver. A. J. Patek Jr.—p. 1.
Acute Coronary Insufficiency: An Entity. Shock, Hemorrhage and Pulmonary Embolism as Factors in Its Production. A. M. Master, S. Dack, A. Grishman, L. E. Field and H. Horn.—p. 8.
Radiation Therapy in Early Laryngeal Cancer. R. Kramer.—p. 24.
Infundibuloma: Case Report, with Review of Literature. B. D. Fine and A. I. Goldfarb.—p. 29.
Usefulness and Limitations of Laboratory Studies in Diagnosis of Virus Diseases. A. L. Florman.—p. 39.
Comparison of Pneumoencephalography and Electroencephalography in Brain Tumors. B. Schlesinger and H. Strauss.—p. 47.
"Benign" (Idiopathic) Bronchial Bleeding: Report of Case. A. R. Sohval.—p. 51.

Dietary Factors in Cirrhosis of Liver.—In the last ten years 124 patients with cirrhosis of the liver have been treated at the research service of the Goldwater Memorial Hospital. They were given a highly nutritious diet supplemented with brewers' yeast and intramuscular injections of liver extract and thiamine hydrochloride. The diet consisted of meat and dairy foods, fruit and green vegetables. Meat was served twice and milk five times daily—three times with meals and twice in the form of milk nogs containing the yeast powder. The average diet contained 3,591 calories. The patients did well on this regimen. It generally required at least two months of treatment before significant changes appeared. Comparison was made with a series of 386 hospitalized patients with liver cirrhosis who entered five New York hospitals during the years 1920 to 1930. These patients received either no specific dietary care or they received the high carbohydrate, low protein diet which was standard treatment at the time. At the end of one year 40 per cent of the controls were alive, in contrast to 65 per cent of the treated series; at the end of five years 7 per cent of the controls and 30 per cent of the treated series were alive. Patek concludes that it is no longer justified to accept cirrhosis of the liver as a disease with a relentless downhill course. A significant number of patients with severe liver failure and a much larger percentage of patients with moderate liver damage can recover with dietary treatment.

Journal of Nat. Cancer Inst., Washington, D. C.

7:183-298 (Feb.) 1947. **Partial Index**

Segregation Mammary Cancer to No Mammary Cancer in the Marsh Albino Strain of Mice. W. S. Murray and S. G. Warner.—p. 183.
*Trypanosoma Cruzi in Treatment of Mouse Tumors. T. Hauschka, L. H. Saxe Jr. and Margaret Blair.—p. 189.
Effect of Diets Deficient in Certain Amino Acids on the Induction of Leukemia in dba Mice. J. White, Florence R. White and G. B. Mider.—p. 199.
Absence of Effect of Urethane on the Latent Period of Tumors Induced with Subcutaneous Injections of the Agent of Chicken Tumor I. W. R. Bryan, V. T. Riley and Dorothy Calnan.—p. 203.
Development of Sarcoma at Site of Serial Transplantation of Pulmonary Tumors in Inbred Mice. H. L. Stewart, H. G. Grady and H. B. Andervont.—p. 207.
Tumors of Alimentary Tract Induced in Mice by Feeding Olive Oil Emulsions Containing Carcinogenic Hydrocarbons. E. Lorenz and H. L. Stewart.—p. 227.
Enzymatic Desamidation of Glutamine in Presence of Pyruvate Furnished by Concomitant Reactions. J. M. Gonçalves and J. P. Greenstein.—p. 269.
Mast Cell Neoplasia in Mice. Margaret K. Deringer and Thelma B. Dunn.—p. 289.

Trypanosoma Cruzi in Treatment of Mouse Tumors.—Hauschka and his co-workers observed that infections with Trypanosoma cruzi (Brazil strain) significantly retarded the growth of squamous epithelial carcinoma 119 in A mice, mammary adenocarcinoma in C3H mice and sarcoma 37 in white mice of unknown genetic background. Spontaneous breast adenocarcinoma in C3H mice was lightly retarded in growth. The infection was more virulent in A than in C3H mice. The inhibitory effect appears to be nonspecific, since it was frequently accompanied with loss in body weight and parasitemia of vital organs such as heart, lungs and intestine. Cancer cells were rarely parasitized. Leishmanian and crithidial forms of T. cruzi were more abundant in the stroma and the connective tissue surrounding some tumors. Retardation in tumor development did not result in longer survival. Endotoxin prepared from heat killed cultures of T. cruzi (Brazil strain) was without effect against carcinoma 119 or against transplantable and spontaneous mammary tumors. The authors conclude that the results they obtained are not to be considered as contradicting the results of the Russians, Roskin and Klyueva, as their strain of T. cruzi has not been available to Hauschka and his co-workers.

Kansas Medical Society Journal, Topeka

48:209-256 (May) 1947

Surgical Treatment of Pilonidal Cysts and Sinuses. F. B. Emery.—p. 209.
High Lights on Malaria. T. V. Oltman.—p. 219.

48:257-308 (June) 1947

Streptomycin. W. E. Herrell.—p. 257.
Penicillin and Streptomycin. Review of Their Current Uses. H. A. Wenner.—p. 261.
*Typhoid Carrier State: Treatment by Cholecystectomy. S. L. Stout, C. T. McCoy and H. Graber.—p. 273.

Cholecystectomy for Typhoid Carrier State.—A woman in her middle thirties had had typhoid a year before her hospitalization. During her typhoid she had been treated in a hospital for several weeks, but her stools continued positive. She was dismissed under surveillance of the public health authorities. The stool was positive for Eberthella typhosa on several occasions. During her stay of almost a month before surgical intervention, she was treated variously with succinyl-

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sulfathiazole, methenamine and penicillin, alone and in various combinations without effect. A cholecystectomy revealed a small, thick walled gallbladder containing a large number of small, many faceted stones. The stools remained positive for three weeks after the operation. Treatment with penicillin and sulfathiazole rendered the stools negative.

Michigan State Medical Society Journal, Lansing

46:489-608 (May) 1947

Serodiagnosis of Syphilis: Recent Advances. C. R. Rein.—p. 541.
Concept of Arterial Hypertension. B. C. Lockwood.—p. 550.
Gynecologic and Obstetric Problems of Industrial Physician. M. R. Burnell.—p. 555.
Tumors of the Female Breast: Diagnostic and Therapeutic Summary. R. D. McClure and D. E. Szilagyi.—p. 559.
Nutrition and Infection. J. A. Johnston.—p. 563.
Control of Virus Infections. T. Francis Jr.—p. 566.
Prevention of Tropical Diseases. H. A. Kemp.—p. 568.

Military Surgeon, Washington, D. C.

100:375-462 (May) 1947. **Partial Index**

Venereal Disease Control in the United States Occupied Zone of Germany. M. C. Stayer and W. A. Brumfield Jr.—p. 375.
Some Phases of Fracture Treatment. R. L. Waugh.—p. 381.
Flight Surgeon: His Role in Student Pilot Training. R. C. Cumming.—p. 385.
Army Veterinary Inspection of Foods of Animal Origin. S. C. Dildine.—p. 390.
Navy's Plastic Ocular Restoration. J. V. Niiranen.—p. 402.
Sanitary Engineer Views the Postwar World. M. J. Blew.—p. 407.
Medical Administrative Corps Officers in the Chain of Evacuation. J. R. Francis.—p. 414.

Minnesota Medicine, St. Paul

30:459-592 (May) 1947

Protein and Amino Acid Therapy. R. Elman.—p. 493.
Relationship of Infectious and Serum Jaundice. J. G. Rukavina and E. L. Tuohy.—p. 498.
Plan for Detection of Source of Rectal Bleeding. H. E. Hullsiek.—p. 503.
The Cruveilhier-Baumgarten Syndrome: Report of Case. W. D. Sieber.—p. 506.
Sulfadiazine Granulocytopenia and Thrombocytopenia Complicating Pregnancy, with Survival: Report of Case. R. Sukman and N. M. Strandjord.—p. 509.

30:593-696 (June) 1947

Communitywide Chest X-Ray Surveys and General Practitioner. H. E. Hilleboe.—p. 625.
Meeker County Tuberculosis Control Project. K. A. Danielson.—p. 635.
*Toxoplasmosis. P. Kabler and M. Cooney.—p. 637.
*Trichinosis in Minnesota. C. B. Nelson.—p. 640.
Deafness, a Therapeutic Problem. A. C. Hildin.—p. 642.

Toxoplasmosis.—Infantile toxoplasmosis is usually characterized by widespread destruction of the central nervous system. In surviving patients residuals such as hydrocephalus, convulsions, chorioretinitis and mental retardation are frequent. The symptoms of adult toxoplasmosis may be extremely variable, with a greater tendency to widespread involvement of the viscera than in infantile infections. It may occur as an acute febrile disease with extensive maculopapular rash involving nearly the entire body. A second type of adult infection appears as a chronic process and presents no signs or symptoms of the disease except for neutralizing antibodies in the blood. The Minnesota Department of Health Laboratories initiated neutralization tests for the toxoplasma organisms. The technic of the test is essentially that described by Sabin in which patients' blood serums are mixed with suspensions of the organism and inoculated into the skin of white rabbits. The blood specimens usually were collected from patients showing one or more of the following: chorioretinitis, convulsions, hydrocephalus, cerebral calcifications, mental retardation and encephalitis or from the parents and siblings of patients who had previously shown a positive neutralization for toxoplasma. The results of tests on 832 specimens from 761 persons indicate that toxoplasmic infections are probably widespread in Minnesota.

Trichinosis in Minnesota.—Nelson says that in January the possibility of an outbreak of trichinosis was brought to the attention of the Minnesota Department of Health. On investigation, a total of 37 clinical cases of trichinosis was disclosed. Thirty-three of the cases occurred in a small village whose inhabitants are predominantly of Central European stock, accustomed to eating sausage frequently and often raw. The majority of patients gave a history of having consumed raw smoked country sausage. The sausage had been prepared for public sale by a local butcher from trimmings of freshly slaughtered pork. No samples of the suspected sausage were available for laboratory examination. The author stresses that prevention of trichinosis is at present the concern of the consumer, and the only safe advice is to be sure that all pork is thoroughly cooked or adequately processed before consumption.

New England Journal of Medicine, Boston

236:817-850 (May 29) 1947

*Oral Administration of Penicillin: Use in 150 Cases. S. Ross, F. G. Burke and S. Olansky.—p. 817.
Treatment of Hysterical Amnesia by Purely Pharmacologic Means. A. Myerson.—p. 821.
Metastatic Melanocarcinoma Involving the Small Intestine and Brain: Report of a Case, with a Discussion of Malignant Tumors of the Small Intestine. J. Spier and E. C. Wood.—p. 824.
General Anesthesia. C. Harris and U. H. Eversole.—p. 829.
Endometrial Sarcoma? Stromal Endometriosis (Endolymphatic Fibromyosis of Frank)?—p. 835.
Multiple Carcinoids of Ileum, with Metastases to Mesenteric Lymph Node.—p. 839.

Oral Administration of Penicillin.—Ross and his associates administered penicillin orally in a total of 150 cases, including gonorrhea, subacute bacterial endocarditis, pneumonia, syphilis, cellulitis, impetigo and acute pharyngotonsillitis. The commercial penicillin tablets used in this study were effective in penicillin susceptible infections if given in sufficiently large doses. The fundamental principles of penicillin therapy when the oral route is employed do not differ materially from those attendant on the parenteral administration except for the greater oral dose required. In adults with gonorrhea, for instance, an arbitrary dosage schedule of 50,000 units of penicillin was administered every three hours for six doses, or a total of 300,000 units. No categorical statement is possible regarding the optimal oral dose of penicillin. The dosage varies from case to case, depending on the severity and the type of infection.

236:851-881 (June 5) 1947

*Pregnancy Following Lumbodorsal Splanchnicectomy for Essential and Malignant Hypertension and Hypertension Associated with Chronic Pyelonephritis. J. L. Newell and R. H. Smithwick.—p. 851.
Disturbances of Metabolism Associated with Head Injuries. W. Pickles.—p. 858.
Outbreak of Influenza B Infection: Epidemiologic Observations. A. D. Rubenstein, E. M. Ory, M. Meads and M. Finland.—p. 862.
Pediatrics Members of the Staffs of Children's and Infants' Hospitals.—p. 867.
Severe Coronary Arteriosclerosis with Extreme Narrowing: Arteriolar Nephrosclerosis.—p. 874.
Dissecting Aneurysm of Aorta, with Rupture into Left Pleural Cavity.—p. 877.

Pregnancy Following Splanchnicectomy for Hypertension.—Newell and Smithwick say that severe hypertension is considered by many an indication for therapeutic abortion. They report 14 cases of arterial hypertension, the pressures on admission prior to splanchnicectomy averaging 196 systolic and 130 diastolic. The time elapsing between the diagnosis of hypertension and the splanchnicectomy averaged seventy-five months. The time between splanchnicectomy and the pregnancy averaged thirty-one months, with the exception of a case in which splanchnicectomy was performed during the first trimester. Fourteen living infants were delivered. Three of the patients had so-called malignant hypertension prior to lumbodorsal splanchnicectomy. They responded favorably to operation and tolerated subsequent pregnancy well. The other 11 patients had severe essential hypertension with or without chronic pyelonephritis. These patients also are living and well following pregnancy. The hypertension was much improved over that prior to splanchnicectomy. The authors conclude that certain hypertensive women may be able to tolerate pregnancy following this operation, which otherwise would be impossible or extremely hazardous. This is particularly true in the younger age group with severe essential and even malignant hypertension.

New York State Journal of Medicine, New York

47:1057-1184 (May 15) 1947

*Protamine Insulin Mixtures in Treatment of Diabetes Mellitus. A. R. Colwell.—p. 1103.
*Clinical Use of Penicillin in Water-in-Oil Emulsion. P. K. Kaufman.—p. 1111.
Summary of Bronchoscopy in Diseases of Chest. J. M. Blake.—p. 1115.
Benadryl: Synthetic Antihistamine Compound for Symptomatic Treatment of Allergic Diseases. L. Farmer and H. Spickschen.—p. 1119.
Peroral Removal of Certain Swallowed Foreign Bodies Without Endoscopy: Introducing New Device Utilizing Alnico Magnet. S. Silber and B. S. Epstein.—p. 1122.
Clinical Use of Vitamins E and C. J. R. Williams.—p. 1125.
Tropical Diseases Found in Veterans. H. B. Shookhoff and W. D. Sutliff.—p. 1127.
Digitalis and Embolic Manifestations Associated with Rheumatic and Arteriosclerotic Heart Disease. S. Epstein.—p. 1131.
Seven and One Half Year Review of Pneumonia Therapy. F. O. Kraus.—p. 1132.

Protamine Insulin in Diabetes Mellitus.—During the last five years Colwell has treated 150 persons who had diabetes mellitus of sufficient severity so that good balance with protamine insulin alone was unobtainable with mixtures of insulin and protamine zinc insulin. About half of the patients were less than 20 years of age at the onset of diabetes. Diets of moderate carbohydrate value were used, usually carbohydrate equal to fat in grams. Only 4 of the 150 with severe diabetes obtained poorer control with mixtures. One hundred and twenty-seven of the 146 using mixtures were balanced satisfactorily on a 2:1 mixture (two parts of regular or crystalline insulin with one part of protamine zinc insulin, both in the U-80 strength) practically always in a single dose daily. In 5 patients, 2⅓:1 mixtures and in 11 patients 2½:1 mixtures were more efficient. Three patients, all rapidly growing juveniles at about the age of puberty, obtained best control with 3:1 proportions. In not a single instance has it been found desirable to use less than 2:1 proportions or to exceed 3:1 ratios. The amount of insulin required for good control was about 10 per cent less, on the average, than with other insulins. Glycosuria was easier to avoid. Insulin shock was less frequent and not so violent. Unexpected irregularities of adjustment were less frequent. General health was better as a rule. These advantages were gained in spite of the fact that only one injection daily was required by nearly all patients.

Penicillin in Water-in-Oil Emulsion.—Kaufman treated 167 persons who had various acute infections, such as pneumonia, follicular streptococcic tonsillitis, pyelitis, sinusitis, acute otitis media, scarlet fever, streptococcic asthmatic bronchitis and furunculosis, with intramuscular injections of penicillin in water-in-oil emulsion. Treatment was given mainly at home or in the office. The extemporaneously prepared water-in-oil emulsions were less expensive and simpler to use than the beeswax-peanut oil mixtures of penicillin. Usually one injection of 200,000 units (3.75 cc. of emulsion) in each twenty-four hour period was given. In a few instances two injections a day were given. Clinical results were as effective as those obtained by the use of penicillin in aqueous solution injected every three or four hours.

Ohio State Medical Journal, Columbus

43:573-688 (June) 1947

Surgical Treatment of Bleeding Peptic Ulcer. R. D. McClure and L. S. Fallis.—p. 605.
*Rocky Mountain Spotted Fever in Ohio. L. R. Evans, F. H. Austin and E. W. McCall.—p. 608.
Some Reflections on Psychosomatic Medicine. R. E. Pinkerton.—p. 613.
Use of Sex Hormones in Clinical Practice. A. C. Barnes.—p. 616.
Diagnosis of Visual Losses with Normal Fundus. D. J. Lyle.—p. 620.
Parenteral Use of Fluids in Infancy. E. H. Baxter.—p. 622.
Indications and Contraindications for Spinal Anesthesia. N. E. Lenahan.—p. 626.
Studies in Human Inheritance: XXIX. Statistical Analysis of Rh-Hr Incompatibility, with Illustrative Data from Cases of Dementia Precox. Ann G. Stancu, P. C. Clark and L. H. Snyder.—p. 628.
Rare Cause of Miscarriage of Twin Fetuses: Case Report. A. Woodburn.—p. 631.

Rocky Mountain Spotted Fever.—Evans and his co-workers report 70 cases of Rocky Mountain spotted fever which occurred in Ohio during the past decade. The most highly infected area is between Columbus and the Ohio River; it is more wooded than much of the terrain in other parts of the state and therefore supports better the necessary small animal reservoir as well as the tick population. Nineteen patients died. The removal of a blood filled tick from the body of a boy was strong evidence of the possibility of spotted fever. The continuation of fever beyond a week and a macular rash later becoming papular and before the end of the first week hemorrhagic should make the physician suspicious of spotted fever even though laboratory diagnostic aids are not available. The agglutination of the Proteus organism, particularly the X-19 strain, and the production of rickettsial lesions in the scrotum of a guinea pig following the intra-abdominal injection of the patient's blood may aid in diagnosis, although serial inoculations are required occasionally. Active treatment of the disease consists of antiserum, para-aminobenzoic acid and supportive measures with infusions of plasma and fresh whole blood. The yearly use of immunization is recommended in a dose of 2 cc. of Rocky Mountain spotted fever vaccine given twice at a five day interval. This is not thought to be valuable longer than one season.

Public Health Reports, Washington, D. C.

62:697-732 (May 16) 1947

Studies of Sewage Purification: Utilization of Organic Substrates by Activated Sludge. O. R. Placak and C. C. Ruchhoft.—p. 697.

62:733-776 (May 23) 1947

Voluntary Health Insurance in Western Europe: Origins and Place in National Programs. G. St. J. Perrott and J. W. Mountin.—p. 733.

South Carolina Medical Assn. Journal, Florence

43:127-156 (May) 1947

Wounds of the Heart: Case Reports. A. G. Brown.—p. 127.
Emergency Tracheotomy. F. Warder.—p. 131.
Public Health Problem: Importation of Diseases in Postwar America. D. D. Brockman.—p. 133.

Southern Surgeon, Atlanta, Ga.

13:299-364 (May) 1947

Acute Malignant Obstruction of Large Bowel: Analysis of 55 Cases. M. L. Michel.—p. 299.
Endometriosis. I. Abell and I. Abell Jr.—p. 321.
Osteomyelitis Today. D. T. Imrie.—p. 330.
Amputations About the Foot Following Trauma. H. D. Morris.—p. 341.
Pressures on the Heart. C. S. Beck.—p. 348.
Carcinoma of the Breast: Treatment and Prevention. W. P. Nicolson Jr.—p. 354.

Texas State Journal of Medicine, Fort Worth

42:673-740 (April) 1947

Indications for Pulmonary Resection. O. T. Clagett.—p. 679.
Management of Menopause and Climacteric. W. P. Devereux.—p. 683.
Rh Factors in Hemolytic Disease of the Newborn. J. A. Nunn.—p. 687.
The Glaucoma Patient. E. W. Griffey.—p. 690.
Clinical Disorders Associated with Functional and Organic Disturbances in Hypothalamic and Other Midbrain Centers. A. Grollman.—p. 693.
Endocrine Problems in Childhood. May Agness Hopkins.—p. 695.
Hanging Cast. R. L. Sewell.—p. 696.

43:1-42 (May) 1947

Potential Pathologic Significance of Dusts Found in Texas Industry. C. U. Dernehl.—p. 4.
Medical Management of Esophageal Disorders: Further Report. C. O. Patterson.—p. 9.
Surgery of Pancreas. O. T. Clagett.—p. 12.
Management of Carcinoma of Colon. R. L. Sanders.—p. 17.
Diverticula of Duodenum. A. G. Barsh.—p. 21.
Intermenstrual Pain. A. E. Winsett.—p. 24.
Clinical Experiences with Intracranial Complications of Ear and Sinus Diseases. G. Mitchell.—p. 25.
Pathologic Basis for Chronic Cardiac Valvular Lesions. C. T. Ashworth.—p. 29.
*Talc Granuloma. S. A. Wallace.—p. 33.

Talc Granuloma.—Wallace directs attention to the injurious effects of talcum powder when used as a dusting powder for surgical gloves. The lesions found in experimental animals and in human beings when talc gains entrance to the peritoneal cavity are granulomatous in appearance, with giant cells, fibrous connective tissue and lymphocytes. The author reports the occurrence of a talc granuloma of the appendix which developed in a man aged 56 who had had two previous abdominal operations. The injurious effects of silica are discussed.

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FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

59:125-198 (April-May) 1947

Study of Miliaria Rubra, Tropical Anhidrosis and Anhidrotic Asthenia. J. P. O'Brien.—p. 59.
Experiences in Skin Department of Prisoner of War Camp Hospital in Singapore, 1942-1945: Part II. L. Sefton.—p. 159.
*Sensitivity to Burnt Coal Gas. P. B. Mumford and G. Auckland. —p. 169.

Sensitivity to Burnt Coal Gas.—According to Mumford and Auckland, allergy to burnt coal gas, as contrasted with unburnt gas, does not appear to have been reported. Their patient was a woman aged 59 who reported recurrent congestion, erythema and irritation of the cheeks and eyelids over a period of two years. Attacks were not severe till November 1945, when an intense inflammation of the face, eyelids and neck developed. This attack was accompanied with general malaise. Spontaneous recovery followed in five days. She attributed the attack to visits to her place of employment, where she and others often remarked on a burnt gas smell. The diagnosis of dermatitis due to contact with burnt coal gas was suggested by the history. Positive response to burnt as contrasted with unburnt gas showed sensitivity to some constituent of the former. Heat was shown to play no part (the negative response to a coal fire, and a gas fire with an efficient flue). There is some evidence that the minute traces of aldehydes produced by burnt coal gas were the responsible irritant.

British Journal of Tuberculosis, London

46:33-54 (April) 1947

*Intestinal Tuberculosis: Some Observations. R. Y. Keers.—p. 33.
Obscure Case of Lymphadenopathy with Pulmonary Fibrosis. M. Davidson and L. R. Woodhouse Price.—p. 38.
Significance of Negative Tuberculin Test. B. Couts.—p. 42.
Miliary Carcinoma of Lung. C. F. Hawkins.—p. 48.

Intestinal Tuberculosis.—Keers reports 6 cases of intestinal tuberculosis occurring in association with moderately extensive pulmonary disease. A low residue, high vitamin diet, calcium and ultraviolet light were the chief therapeutic measures. This regimen is of considerable value in such cases, but the permanence of any result achieved is dependent on effective control of the parent lesion in the lung.

British Medical Journal, London

1:751-794 (May 31) 1947

Dental Condition of 5 Year Old Children in Institutions and Private Schools Compared with L. C. C. Schools. Helen Coumoulos and May Mellanby.—p. 751.
*Penicillin-Treated Series of Cases of Osteomyelitis in Childhood. T. T. Higgins, D. Browne and M. Bodian.—p. 757.
*Refrigeration Anaesthesia. E. S. R. Hughes.—p. 761.
Primary Malaria in London Children: Report of 2 Cases. C. B. Levick and M. E. MacGregor.—p. 764.

Penicillin in Osteomyelitis in Childhood.—The three series of cases reviewed by Higgins and his associates included 31 cases of acute osteomyelitis, 4 cases of acute suppurative arthritis and 5 cases of chronic osteomyelitis. Of the acute cases 50 per cent were in infants under 1 year old. Dosages of penicillin were relatively small—1,000 units per pound (454 Gm.) of body weight in twenty-four hours for three weeks. In acute osteomyelitis and arthritis surgery was confined to aspiration of pus. Immobilization was partial and for short periods. In suitable cases of chronic osteomyelitis excision of infected tissue and primary suture is advised. Mortality was nil. Complete restoration of function occurred in all but 1 of the acute cases. There was apparent complete healing in all the chronic cases.

Refrigeration Anesthesia.—Refrigeration anesthesia for limb amputations was introduced into the Royal Melbourne Hospital toward the end of 1944. Since then 25 lower limb amputations have been performed with the aid of this technic. The most simple technic was used. Bronchopneumonia was the most frequent complication. Hughes discusses recent opinions concerning the effects of cold temperatures and the application of tourniquets. He concludes that although refrigeration is a valuable form of anesthesia he does not think that it should be used for all cases of amputation. He admits that there are certain bad risk cases in which life can be saved by resort to this technic.

Glasgow Medical Journal

28:145-172 (June) 1947

*Observations on Use of Benadryl in Duodenal Ulcer. A. W. Kay, L. D. W. Scott and W. E. Smith.—p. 145.
Some Aspects of Acute Pyelonephritis in Practice. J. W. Ferguson. —p. 149.
Thiouracil and Methylthiouracil in Treatment of Thyrotoxicosis. J. C. Eaton.—p. 155.

Benadryl in Duodenal Ulcer.—Kay and his associates used benadryl for duodenal ulcer in a small number of patients. Although the trial was primarily designed to assess the action of benadryl on gastric motility, the opportunity was taken to estimate its influence on gastric acidity, and a careful record was made of any change in the clinical condition of the patient. They were unable to show that benadryl has any influence on gastric motility even with doses sufficiently large to produce troublesome drowsiness. It has also been impossible to show any constant lowering of gastric acidity. Against these negative observations may be set the clinical findings. A short course of benadryl was followed by relief of all symptoms in 3 cases and by clinical improvement in 2 cases, leaving only 1 to be classified as a failure. But peptic ulceration with its characteristic remissions is peculiarly unsuited for therapeutic trials assessed on a purely clinical basis.

Journal of Endocrinology, London

5:59-110 (April) 1947. **Partial Index**

Factors Involved in Maintaining Involution of the Thymus During Suckling. C. Gregoire.—p. 68.
Inactivation of Chorionic Gonadotropin by X-Rays. A. Hochman, R. Black, G. Goldhaber and F. Sulman.—p. 99.
Induction of Diabetes by Means of Alloxan. J. H. Gaarenstroom. —p. 103.

Quarterly Journal of Medicine, Oxford

16:47-98 (April) 1947

Edema in an Internment Camp. R. A. Pallister.—p. 47.
*Mepacrine and Falciparum Malaria. J. Reid.—p. 61.
Review of Chronic Intermittent Juvenile Jaundice. E. Meulengracht. —p. 83.

Quinacrine and Falciparum Malaria.—The experiments described by Reid were undertaken on volunteers in London to provide information on the correct use of quinacrine in the forces campaigning in highly malarial parts of the world. It was found that a sustained quinacrine blood level of at least 100 micrograms per liter of blood was required to prevent malaria. Blood quinacrine levels of less than 100 micrograms per liter in volunteers inoculated with sporozoites invariably resulted in a real attack of malaria with parasitemia or a transient fever without obvious parasitemia. The transient fever appeared to be an early sign of an impending attack of malaria in non-immune volunteers, because it invariably developed at the same time as malaria would have been expected and because malaria was transmitted on one occasion by injecting blood from an inoculated volunteer taken at the onset of transient fever. The incidence of transient fever in soldiers taking the routine dose of 0.1 Gm. of quinacrine daily for malaria prevention in hyperendemic areas would be expected to be high, because about one third of the blood quinacrine estimations in the volunteers taking this dosage were below the critical value of 100 micrograms per liter after the first six weeks. The rise in blood quinacrine cured the fever. It is suggested that this rise is due to a transference of quinacrine to the blood from the high tissue reserves as a result of the acidosis of fever. Serious toxic reactions from quinacrine are associated with a high blood level of the drug. Alimentary disturbances are probably due to the local action of quinacrine. They may be prevented if liberal quantities of fluid are taken. This is of particular importance in the treatment of malaria, as sweating causes dehydration. Degradation is the most important factor that influences the level of the drug in the blood. After the drug has been taken for about two months, about 70 per cent of each daily dose of 0.1 Gm. is degraded. Assessment of the value of quinacrine by estimation of the blood levels proved superior to the older practice of assessment on a dosage basis.

Archives des Maladies de l'Appareil Digestif, Paris

36:1-128 (Jan.-Feb.) 1947

*Treatment of Generalized Essential Rectocolic Polyposis. J. Charrier, P. Hillemand and L. Hartmann.—p. 5.
Solitary Abscess of Liver Due to Staphylococcus. L. Dejou and Chippaux.—p. 16.
*Hargreaves-Blanc's Method of Treatment of Chronic Amebiasis and of Its Relapse in Tropical Environment, Based on One Hundred Observations. F. Siguier.—p. 33.

Rectocolic Polyposis.—Charrier and his co-workers report 1 case of generalized rectocolic polyposis in a woman aged 22. Thirty to forty rectal and sigmoidal polypi were destroyed by electrocoagulation when treatment was started. This was followed by ileosigmoidostomy and one month later by colectomy. Rectal hemorrhages recurred three years later and small polypi were destroyed by repeated electrocoagulation. Rectal hemorrhages recurred again three years later resulting from new polypi which were not accessible to endoscopic control or treatment. Resection of the colon and of the rectum was done in two stages, the first abdominal, the second perineal. Anastomosis of the ileum to the anus instead of an abdominal ileostomy ensured sphincteric control. Penicillin and local sulfonamide therapy facilitated primary suture of the perineal incision. Microscopic examination of the specimen revealed malignant degeneration of two polypi, one in the sigmoid flexure and the other in the rectum. It is emphasized that intervention should not be delayed until the patient has reached the state of cachexia and confluent polyposis.

Hargreaves-Blanc Treatment of Amebiasis.—Treatment of chronic amebiasis in patients from Burma and Indo-China by simultaneous administration of penicillin, sulfonamide compounds and emetine was practiced independently by Hargreaves in England and by Blanc in France. Siguier employed this method for "thrust" treatment of 100 patients with severe chronic amebiasis. For the first seven days they were given 0.42 Gm. of emetine, 1,400,000 units of penicillin and 112 Gm. of sulfanilyl guanidine monohydrate. Penicillin and sulfaguanidine were discontinued on the eighth day, but emetine administration was continued with 0.04 Gm. daily until the patient had received as many centigrams of the drug as his body weight amounted to in kilograms. The patients were not subjected to strict rest in bed, received no other treatment and were not placed on a special diet. In a few days the number of stools was reduced considerably and there was a definite improvement in the general condition. This effect was permanent in only 50 per cent of the cases, while relapses occurred in the other 50 per cent. The relapses occurred at much longer intervals, from one to three months, as compared with those of from ten to fourteen days in patients who had received only emetine treatment. The frequent association of cumulative toxicity of emetine with the dysenteric relapse could be prevented and the amebic dysentery made amenable to treatment. Penicillin and sulfaguanidine are effective in controlling the colitis of severe chronic amebiasis.

Archives des Maladies Professionelles, Paris

7:437-512 (No. 6) 1946

*Prevention and Treatment of Silicosis with Metallic Aluminum and with Aluminum Hydrate. A. Policard and A. Hanaut.—p. 437.
Etiologic, Clinical and Chemical Study of 40 Cases of Occupational Chronic Intoxication with Carbon Monoxide. M. Duvoir and M. Gaultier.—p. 449.
Disease Caused by Vibrations. B. Desplas and P. Bernard.—p. 453.
Comparative Study of Anthropometric and Biometric Rules in Europeans and North Africans According to Age, Sex and Occupation. P. R. Bize.—p. 465.
Prophylaxis of Silicosis in Mines. J. Magnin.—p. 475.

Prevention and Treatment of Silicosis.—Policard and Hanaut's experiments on rats demonstrated that the admixture of 5 per cent metallic aluminum powder or aluminum hydroxide to quartz particles may inhibit the sclerosing effect of the latter on the liver (by the intravenous route) or on the lungs (by inhalation or by intratracheal injections). The aluminum particles were accumulated in the cells containing dust, and agglomeration of those cells was responsible for the blockage of alveoli. The cells which contained the dust did not seem to be changed but appeared immobilized by the numerous particles which they contained. These observations correspond to those of L. U. Gardner on the accumulation of particles in the elements of the reticuloendothelial system and on the resulting blockage. It is suggested that this inhibitory effect results from the formation of a protective film around the silica particles, the dissolution of which may thus be prevented. One must be cautious in applying these experimental results to man. Favorable results have so far been obtained by the application of metallic aluminum powder or of aluminum hydroxide only with regard to functional disturbances, particularly dyspnea. It is likely that these results may depend on psychologic factors, but the results nevertheless justify the continuation of methodical and impartial trials.

Semaine des Hôpitaux de Paris

23:965-1028 (April 21) 1947

Inaugural Lecture on Induction into Chair for Medical Pathology. R. Moreau.—p. 965.
*Chorionepithelioma Not Preceded by Vesicular Mole. J. Ravina and B. Jamain.—p. 974.

Chorionepithelioma.—Ravina and Jamain report a case of malignant chorionepithelioma of the uterus in the absence of molar pregnancy in a woman aged 23. The patient was delivered in December 1944 at term of a normal infant. Normal menstruation occurred in February 1945. There was a period of amenorrhea between February and May 1945, followed by metrorrhagia until July 1945 and associated with loss in weight and asthenia. Metrorrhagia disappeared after six injections of progesterone. There followed a second period of amenorrhea until February 1946, when a subtotal hysterectomy was performed. Microscopic examination of the uterus revealed infiltration with Langhans and syncytial cells, i. e. an atypical form of chorionepithelioma as described by Marchand. The presence of a vascular mole which might have preceded the chorionepithelioma was not demonstrated, and this holds true whether the etiologic concept of chorionepithelioma following the pregnancy terminated in December 1944 or that of chorionepithelioma following a new pregnancy beginning in July 1945 is considered.

Cardiologia, Basel

11:175-302 (Nos. 4 & 5) 1946-1947. **Partial Index**

New Method for Determination of Beat Volume of Heart. O. Hubacher and M. Nyffeler.—p. 175.
*Cutaneous Precordial Anesthesia in Angina Pectoris and Coronary Occlusion. I. Lindgren.—p. 207.
Isolated Diffuse Interstitial Eosinophilic Myocarditis. W. Reinhart.—p. 219.

Cutaneous Precordial Anesthesia in Angina Pectoris and Coronary Occlusion.—Lindgren induced typical attacks of angina pectoris in many patients by hypoxemia or exercise. Effect of anesthesia was studied during these attacks. The anesthesia was induced with 1 per cent procaine solution without admixture of epinephrine, 10 to 25 cc. usually being used. It was found that after induction of precordial anesthesia standardized hypoxemia and exercise tests produced less pain and less electrocardiographic changes than a corresponding test without anesthesia. This may indicate that amelioration of anginal pain is accompanied with improved coronary circulation. Patients submitted to extensive cervicothoracic sympathectomy and exposed to the same functional tests before and after operation likewise show less pain and improved electrocardiograms postoperatively. Precordial anesthesia by means of a local anesthetic of long-standing action in patients with myocardial infarction has proved a valuable therapeutic agent in relieving pain in patients in whom morphine was ineffective.

Gazzetta Medica Italiana, Milan

106:19-44 (Feb.) 1947. **Partial Index**

Pneumoperitoneum in Treatment of Pulmonary Tuberculosis: I. Peritoneal Cavity. D. Puglisi.—p. 20.
Thoracicoabdominal Relationship. T. Bianco and D. Puglisi.—p. 21.
Pneumoperitoneum in Treatment of Intestinal Tuberculosis. C. Palenzona.—p. 28.
*Pneumoperitoneum in Treatment of Pulmonary Tuberculosis. A. Restellini and G. Bardesono.—p. 31.

Pneumoperitoneum in Pulmonary Tuberculosis.—According to Restellini and Bardesono pneumoperitoneum reduces the protein concentration of the serum; there is a tendency toward shortening of the blood sedimentation rate. A

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hemoclastic crisis was suggested by eosinophilia. The introduction of large quantities of air with pneumoperitoneum maintained at an elevated pressure was responsible for a tendency toward slowing of the pulse and increased arterial tension. Pneumoperitoneum did not reduce the vital capacity of 12 patients in whom the vital capacity was determined before and after pneumoperitoneum was performed.

106:45-68 (March) 1947. Partial Index

Pneumoperitoneum in Treatment of Pulmonary Tuberculosis: II. Roentgenologic Symptomatology of Pneumoperitoneum. M. Boffano.—p. 45.
*Treatment of Bronchial Asthma with Pneumoperitoneum. M. Taraglio. —p. 61.

Pneumoperitoneum for Bronchial Asthma.—Taraglio treated with pneumoperitoneum 17 patients between the ages of 25 and 58 who had bronchial asthma. Four patients had essential bronchial asthma, 10 patients presented an asthmatic syndrome associated with tuberculosis and 3 patients were silicotic, with tuberculous complications and an asthmatic syndrome. In the first group the asthmatic attacks with cough and dyspnea disappeared almost completely after pneumoperitoneum was repeated two or three times. In 1 case the arterial tension was reduced from 175 to 150. In the second and third groups (13 patients) the asthmatic disturbances disappeared completely in 4 patients within the first twenty days after treatment was instituted, in 7 patients the same good result was obtained in sixty days, and 3 patients were improved considerably. There was a drop in temperature, less cough was present and appetite and gastrointestinal function were improved. Patients should be hospitalized for the treatment. The mechanical action of the pneumoperitoneum has a reflex and nervous effect. Particular stimuli may be associated with the thoracicoabdominal relationship and supported by the existence of a reflexogenic zone in the abdomen by which the respiratory activity may be influenced.

Medicina Internazionale, Milan

55:49-100 (March-April) 1947. Partial Index

Pernicious Anemia in Syphilitic Infection. G. B. Cottini.—p. 49.
*Acetylcholine Treatment of Schizophrenia. A. M. Fiamberti.—p. 60.
Pathology of Hydrosaline Exchange in Infants with Reference to 1 Case of Diabetes Insipidus. E. Schwarz-Tiene.—p. 66.
Tropical Physiopathology. L. Supino.—p. 69.

Acetylcholine Treatment of Schizophrenia.—Fiamberti treated 311 schizophrenic patients with massive doses of acetylcholine by the intravenous route. One hundred daily injections of 0.50 Gm. of acetylcholine bromide in 2 cc. of distilled and sterilized water or five courses of twenty injections at intervals of one week were given. Only half the dose (0.25 Gm.) was used for the first three injections of all patients and throughout the entire treatment of patients with decisive vagotonia. Complete recovery occurred in 99 patients (47 men and 52 women), 136 patients (79 men and 57 women) were improved and 76 patients (28 men and 48 women) were failures. It is suggested that acetylcholine has a direct and specific effect on the mechanism of liberation of the mediator substance by which the disturbed interneuronic transmission of the nervous impulses with the resulting dissociation may be restored to normal.

Deutsche medizinische Wochenschrift, Stuttgart

71:241-280 (Nov. 15) 1946. Partial Index

Alloxan Diabetes. E. Abderhalden.—p. 241.
Differential Diagnosis of Bone Diseases Accompanied with Rheumatism. A. Heinrich.—p. 246.
*Prognostic Evaluation of Epidemic Hepatitis. A. Störmer.—p. 250.
Contraction Atelectasis by Pulmonary Spasm. A. Sturm.—p. 255.
Action of Cold on Total Organism. W. Schneider.—p. 259.
*Pathogenesis of Tuberculous Meningitis. E. Achelis.—p. 262.

Prognostic Evaluation of Epidemic Hepatitis.—According to Störmer the prognosis differs in the various forms of epidemic hepatitis. In the war epidemics the cases were usually mild and uncomplicated. The disease is apparently less harmful in adults than in children, but in young and strong adults it usually takes a milder course than in older persons with less resistance. The sooner the patient comes under treatment and the more consistently the treatment is carried out, the sooner will the symptoms subside. In all stages of the disease there exists impairment of the hepatic cells with reactions on the capillary walls and regressive processes in the epithelial apparatus which finally involve the entire liver in toxic or anoxemic process. Epidemic hepatitis may be regarded as a serious impairment of the hepatic cells. The importance of the hepatic function in the intermediate metabolism indicates that a period of rest is necessary in order to facilitate the regeneration of the damaged liver cell.

Pathogenesis of Tuberculous Meningitis.—Achelis reviews observations on 200 cases of tuberculous meningitis which came up for necropsy at the Rostock Pathologic Institute between 1935 and 1945. The number of male and female patients was nearly equal. The seasonal incidence was highest in June and lowest between October and January. The disease was most frequent in children under 2 years of age. Fifteen per cent of the patients had solitary tubercles in the brain. Tuberculous processes in the vertebrae were the point of origin from which the tuberculous meningitis spread by continuation in 4 per cent of the cases. Hematogenic dissemination is of greatest importance. Occasionally, trauma may be the eliciting cause. As regards the mode of manifestation, the author differentiates 4 groups of cases: In the first group tuberculous meningitis concurred with the primary complex without other tuberculous processes. This form was seen chiefly in young children. In the second group tuberculous meningitis concurred with early generalization; this form likewise was most frequent in young children. The third group, in which tuberculous meningitis was associated with general miliary tuberculosis, was the largest. In the fourth group the tuberculous meningitis was associated with tuberculosis of certain organs, chiefly the lung, but in some of these there also existed a generalized miliary tuberculosis.

Acta Dermato-Venereologica, Stockholm

27:173-258 (No. 3) 1947

Method of Therapeutic Application of Massive and Progressive Doses of Amide of Nicotinic Acid: Cure of 6 Cases of Erythema Induratum (Bazin) and Results Obtained in Tuberculous Adenopathies. J. Ferreira-Marques.—p. 173.
Contribution to the Zoster-Varicella Question: Two Cases of Generalized Herpes Zoster. T. Granroth.—p. 198.
*Treatment of Lupus Vulgaris with High Doses of Calciferol. W. J. Hohmann and G. W. Beening.—p. 207.
*Bakers' Eczema in Finland. O. Kilpinen.—p. 216:
Effect of Antihistamines on Intracutaneously Injected Histamine, Peptone, Morphine Hydrochloride and Atropine Sulfate. A. Nilzén. —p. 225.
Experimental and Clinical Investigations of Recent Antihistamines and Their Effect on Allergic Diseases. P. H. Nexmand and O. Sylvest. —p. 231.

High Doses of Calciferol in Lupus Vulgaris.—Hohmann and Beening used Dowling's method of treatment in 87 patients with lupus vulgaris. The method consists in administering vitamin D_2 or calciferol in tablet form. The tablets used by Hohmann and Beening contain 30,000 international units of calciferol each. During the first week the patients are given one tablet three times daily, then for three months one tablet five times daily, and after that the dose is decreased to three tablets and then to one tablet a day. The majority of patients had been treated for years with local remedies either without effect or with only temporary improvement. The effects of calciferol treatment were fine without exception. This method gives rise to no complaints and is easy to employ.

Bakers' Eczema in Finland.—Kilpinen found that 8 of 653 bakers he investigated had bakers' eczema. This incidence of only slightly more than 1 per cent contrasts with the much greater frequency observed ten or twenty years ago. Furthermore, the symptoms are less severe now. The author thinks that an explanation for the rare incidence of bakers' eczema nowadays lies partly in the fact that bakeries use more machinery, which reduces handling of the dough by hand. Formerly, when the dough was kneaded by hand, the flour and dampness caused chapping of the surface of the skin. The flour proteins and flour improving substances were enabled to influence through the small openings the deeper tissues of the skin, gradually effecting the sensitization of the skin to these substances. Another noteworthy factor is the decrease in the use of the persulfates.

Book Notices

Rh: Its Relation to Congenital Hemolytic Disease & to Intragroup Transfusion Reactions. By Edith L. Potter, M.D., Ph.D., Assistant Professor of Pathology, Department of Obstetrics and Gynecology, the University of Chicago and the Chicago Lying-In Hospital, Chicago. Cloth. Price, $5.50. Pp. 344, with 65 illustrations. Year Book Publishers, Inc., 304 S. Dearborn St., Chicago 4, 1947.

Since Landsteiner and Wiener announced the discovery of the Rh factor in January 1940, papers related to the factor and to its applications have been appearing at an ever increasing rate. Seven hundred items are listed in Dr. Potter's book. Even those especially interested in the subject have difficulty keeping abreast. Dr. Potter's monograph appeared at a very opportune moment when the need for a survey became extremely acute.

The first chapter, a general survey, is a twenty page summary and seems to have been placed at the beginning as a realistic concession to those who like to start a book by reading the summary usually found at the end. The historical background is presented in the second chapter. The immunologic relations of the Rh antigens and antibodies are covered in chapter three. This phase of the Rh factor is the most difficult to present to the noninitiated, and some writers have succeeded in making it so obscure that many turn away when they hear the topic mentioned. Potter's presentation is admirable in its lucidity and logic of development. The chapter can be recommended as the best antidote to those who have become confused by other writings on immunology of the Rh factor.

The subject of chapter four is the Rh factor in transfusion reactions. Chapter five deals with hemolytic disease (fetal erythroblastosis). The author's special experience in this field is apparent in her masterful handling of the various phases: clinic, diagnosis, pathology and treatment. The technic of Rh testing is treated in the last, sixth, chapter. The sixty-five illustrations are excellent.

It is fortunate that the first monograph on the Rh factor has been done so exceedingly well. Physicians will find here a clear, critical and fascinating presentation of one of the most talked of subjects of modern medicine.

Psychological Research in the Theaters of War. Edited by William M. Lepley Associate Professor of Psychology, Pennsylvania State College, State College, Pennsylvania. Army Air Forces Aviation Psychology Program Research Reports, Report No. 17. Cloth. Price, $1. Pp. 202. Supt. of Doc., Government Printing Office, Washington 25, D. C., 1947.

Before the United States entered World War II, psychologists had begun to work out technics of selection of combat crews. Their technics tested aptitude and intelligence and were considered highly successful, although validation was never scientifically achieved. These psychologists so completely sold their services to the air forces that the utilization of psychiatrists for the study and treatment of emotional disorders was greatly neglected. The cost in man power was probably greater than that saved through psychologic selection. The present volume represents the type of psychologic research that completely excludes the dynamic emotional factors responsible for failure in combat. There are dozens of statistical tables concerned with scores, validated by the adage that this is a scientific or score keeping age, and if one doesn't keep score one never knows the score. The editor admits that the evidence presented is at once tenuous and massive and that few of the validity indexes considered by themselves are impressive. This book represents the results of a worldwide investigation at tremendous cost in money and personnel. Its results seem hardly commensurate.

Functional Cardiovascular Disease. By Meyer Friedman, M.D., Director, Harold Brunn Institute for Cardiovascular Research, Mt. Zion Hospital, San Francisco. Cloth. Price, $3. Pp. 266. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2, 1947.

This book proposes a new name, "functional cardiovascular disease," for neurocirculatory asthenia, and a new unproved theory, "corticohypothalamic imbalance," to explain it. The disorder already has too many names and the necessity for a new name is not clear. It seems particularly unfortunate to rename a disorder with multiple manifestations for its cardiovascular symptoms alone. The theories of "corticohypothalamic imbalance" and "cortical recession" are rather vague and are offered without benefit of any neuropathologic examinations of either the cortex or the hypothalamus. Much is made of the idea that the patients have fever. This idea is against general clinical experience; it is poorly documented, using the statistical artefact of comparing the mean maximum temperature of the highest 11 of 30 patients with that of the whole group of 11 controls. At that, the slight difference in maximum temperature between patients and controls is not statistically significant, the significance ratio, which the author did not present, being 0.98, not significant. Giddiness in the disorder is explained by "cerebral anemia," but no data are presented to show that there really is "cerebral anemia." Excursions of the pulmonary artery, abnormal in size, were described in connection with giddiness; the method of making this difficult measurement and adequate control data are not presented. It should be emphasized that this type of neurologic and physiologic theorizing is no more valid than the vast amount of psychologic theorizing which abounds in this field. The presentation of tables and the use of some modern physiologic methods may present the uncritical reader with the illusion that all the assertions are scientifically proved. A method of treatment is recommended, but there are no adequate follow-up studies or control studies to tell us whether the patients are better, worse or the same after treatment. In general, this work does not have relevant conclusive evidence for the assertions made and gives evidence of being hastily prepared.

Retinal Structure and Colour Vision: A Restatement and an Hypothesis. By E. N. Willmer, Sc.D. Cloth. Price, $4.50; 21s. Pp. 231, with 78 illustrations. Macmillan Company, 60 Fifth Ave., N. Y. 11; Cambridge University Press, Bentley House, 200 Euston Rd., London, N. W. 1, 1946.

In this technical but interesting work the author reemphasizes the fact that there is no histologic explanation to satisfy the functional requirements of the trichromatic theory of color vision of Helmholtz and Young. This theory would require three retinal receptor elements, when, as a matter of demonstrable fact, there are only two such elements known, namely the rods and the cones. Willmer reviews the known facts, and then by modifying certain proved data, particularly the photoptic curves of Abney, he builds up a very interesting and plausible theory of color vision which accounts for many of the phenomena of color vision purely on the basis of the rods and cones as receptors. As the author recognizes, there are certain phenomena which cannot be accounted for on the basis of the thesis he has developed, particularly the central perception of blue light. To satisfy these phenomena Willmer postulated the existence of a type of rod occurring in the foveal area, anatomically not differing greatly from the cones found there, which he calls "day-rods" in contrast to the more typical rods occurring in the periphery. Because of the technical aspects of the subject and of the way it is developed, this book will not be of great use to clinical ophthalmologists. To any one particularly interested in color vision it will stand as a stimulating and thought provoking piece of work.

Practical Physiological Chemistry. By Philip B. Hawk, Ph.D., President, Food Research Laboratories, Inc., Long Island City, N. Y., Bernard L. Oser, Ph.D., Director, Food Research Laboratories, Inc., and William H. Summerson, Ph.D., Associate Professor of Biochemistry, Cornell University Medical College, New York City. Twelfth edition. Fabrikold. Price, $10. Pp. 1,323, with 329 illustrations. Blakiston Co., 1012 Walnut St., Philadelphia 5, 1947.

A comparison of the preceding edition of this textbook with the present edition indicates a number of revisions and additions in keeping with the rapid recent advances in the field of biochemistry. The presentation of the material closely follows the pattern of previous editions of the book, in which the factual and theoretical considerations are presented, followed by laboratory tests and exercises. References are included at the end of each chapter. Among the new material presented are discussions on enzymes, isotopes, colorimetric analyses and electrophoresis. The description, diagrams and explanations of the use of modern laboratory equipment, such as photoelectric colorimeters and the Warburg apparatus, are valuable additions. The authors have increased the accuracy and scope of the material presented by obtaining the aid of a number of authorities in

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various phases of biochemistry. These contributors have in some cases supplied complete new chapters and in other instances have revised certain sections. The edition is a valuable reference book and one of the better textbooks. While the methods included in the book are satisfactory as laboratory exercises, they are in many cases not the methods of choice for investigational work. The book is presented in an understandable and logical manner, is well printed on good material, and will undoubtedly find much use, like previous editions, as a textbook and reference work for biochemistry.

Recent Trends in Alcoholism and in Alcohol Consumption. By E. M. Jellinek, Sc.D., Director, Section of Studies on Alcohol, Laboratory of Applied Physiology, Yale University, New Haven, Connecticut. [Published simultaneously in the Quarterly Journal of Studies on Alcohol, Vol. 8, No. 1, June 1947.] Paper. Price, 50 cents. Pp. 42, with 4 illustrations. Distributed by Quarterly Journal of Studies on Alcohol, Box 2162 Yale Station, New Haven, Conn.; Hillhouse Press, 432 Temple St., New Haven, Conn., 1947.

This timely and competent study attempts to answer these important questions now in the public mind: What is the trend of alcohol consumption? What is the percentage of alcoholic addicts in our adult population? According to Dr. Jellinek, the consumption of alcoholic beverages in the population below 15 years of age is so negligible that for practical purposes it may be disregarded. On the basis of all the data and statistics now available, the consumption of alcohol rose steadily during World War II. The percentage increase in the number of alcoholic addicts is less in the female than in the male adult population. The rates of chronic alcoholism appear to be determined by unwritten social controls rather than by legal control factors. The trend of deaths from alcoholism is no index of inebriety. It reflects the progress of medicine in the treatment of this disease. As to states, the adult citizens of California consume more alcohol than do the adult citizens of North Carolina. But, curiously, the adult population of the District of Columbia tops even the people of California. In presenting this critical analysis of existing information of significant aspects of the medical and social aspects of the alcohol problem Dr. Jellinek has done a distinct service to society and to the medical profession.

Nurse-Patient Relationships in Psychiatry. By Helena Willis Render, R.N., Chief Nurse, Iowa State Psychopathic Hospital, Clarinda, Iowa. Cloth. Price, $3. Pp. 346, with 9 illustrations. McGraw-Hill Book Co., Inc., 330 W. 42d St., New York 18, 1947.

This book represents a carefully prepared, well written manual intended to stimulate the betterment of psychiatric nursing care. Not only has the author done an excellent piece of work but the reading of her book should stimulate further study from the extended bibliography which is listed after each chapter. The book may profitably be read by all nurses as well as those engaged in psychiatric nursing for the reason that psyche and soma cannot be separated and every somatic case presents some psychologic manifestations just as many purely psychologic or emotionally disturbed patients may present problems of a somatic nature. As the author states, "Psychiatric nursing is not unique; the details are common to all good nursing. Yet when a patient in a general hospital becomes mentally ill, how many nurses realize that they can offer the patient everything that nurses in a hospital for the mentally ill can, except perhaps a window out of which he cannot escape?"

Radiology for Medical Students. By Fred Jenner Hodges, M.D., Professor and Chairman, Department of Roentgenology, University of Michigan, Ann Arbor; Isadore Lampe, M.D., Associate Professor, Department of Roentgenology, University of Michigan, and John Floyd Holt, M.D., Assistant Professor, Department of Roentgenology, University of Michigan. Cloth. Price, $6.75. Pp. 424, with 103 illustrations. Year Book Publishers, Inc., 304 S. Dearborn St., Chicago 4, 1947.

This excellent little volume by the senior members of the department of roentgenology of the University of Michigan is faithful to its title and should prove to be a popular textbook in this phase of medical education. American educators are coming to realize that radiology, like pathology, must be taught to all medical students, not merely to those intending to specialize in the field, though of course it does not follow that the time devoted to the subject, the teaching methods or the textbooks should resemble those in pathology. Daily contact with radiology in the wards, in clinics and on rounds is of fundamental importance, but there is a place also for a certain amount of classwork, and this textbook is aimed squarely at the needs of such classes.

The diagnostic portion does not pretend to be and is not, in fact, an atlas or reference work, but its 250 pages do provide all the didactic instruction in radiology that is really needed by the physician who is not specializing in this field. The material is presented logically, and skill has been applied to the deletion of nonessentials so as to keep the whole well within the scope of the medical student, busy though he may be with other important phases of the crowded medical curriculum.

The illustrations, which are such a vital part of any book on radiology, are reasonably plentiful and for the most part good, but they would be more helpful to the student if they were larger and if more of them carried legends. The authors' deliberate policy of using no legends and keeping each illustration as close as possible to the textual reference requires small illustrations and at best merely avoids repeating in the legends material already dealt with in the text. Actually, of course, repetition is a cardinal virtue in pedagogy and in addition legends would be conducive to "browsing," which is all but impossible with the present format.

The 150 pages on radiation therapy deal admirably with this phase of radiology, and the illustrations are provided with informative legends. This portion of the book probably will appeal not only to medical students but also to young physicians, including those just embarking on a career in radiology.

Uterine Contractility in Pregnancy: A Study of the Contractions of Pregnancy and Labor under Normal and Experimental Conditions. By Douglas P. Murphy, M.D., F.A.C.S., Assistant Professor of Obstetrics and Gynecology and Research Associate in the Gynecean Hospital Institute of Gynecologic Research, University of Pennsylvania, Philadelphia. Fabrikold. Price, $5. Pp. 134, with 64 illustrations. J. B. Lippincott Co., 227 S. 6th St., Philadelphia 5, 1947.

The reading of this volume gives one the impression that many of the chapters were written entirely separately and were later compiled to form a book. The unique use of conclusion or summary at the end of each chapter is impressive. The many tables and graphs are prima facie evidence of the author's extensive investigation of uterine contractility. The book can be recommended for one who is interested in studying the frequency and types of uterine contractions, particularly those who may be interested in the muscular behavior of the human uterus in advanced pregnancy, prodromal labor and parturition. The uterine motility is only one important factor in labor. Consequently this publication is recommended only for its merit of basic study and not for routine clinical use.

Confrontations radio-anatomo-cliniques. I. Publiées sous la direction de M. Chiray, R.-A. Gutmann, et J. Sénèque. Paper. Price, 370 francs. Pp. 55, with 98 plates. G. Doin & Cie, 8 Place de l'Odéon, Paris 6e; Masson & Cie, 120 Boulevard Saint-Germain, Paris 6,e 1946.

This is the first of what is evidently intended to be a series of publications in which the editors plan to correlate the radiologic, anatomic and clinical contributions toward the solution of diagnostic problems. The title indicates the plan: (1) a brief history of the case; (2) reproduction of the roentgenograms on which the diagnosis has been based or which, as is perhaps more intriguing, have led to diagnostic error; (3) to add then the operative specimen and to discuss the case as far as it is useful in relation to the laboratory findings. The material is selected from the regular monthly medical clinics which are held under the common direction of the authors. The first volume includes a discussion of esophageal varices, diaphragmatic gastric hernia with volvulus, false aspect of gastric cancer due to perigastritis, chronic ulcerative gastritis, hour-glass stomach and other similar interesting gastrointestinal clinical reports. Of great interest are the case of syphilitic hour-glass stomach and a series of gallbladder and common duct studies. Altogether 30 cases are included in the fifty-four pages of text. The illustrations are numerous and beautifully reproduced on excellent paper. We shall look forward to future numbers in this series.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

BLOOD SUPPLY OF LUNGS AND SUSCEPTIBILITY TO TUBERCULOSIS

To the Editor:—**The theory that the standing or sitting position reduces blood flow in the upper parts of the lungs and so favors the growth of tubercle bacilli is understandable. Could you inform me what is the reason that the secondary tuberculous infection has a preference for the apical lung regions but that the primary tuberculous infection does not show this preference? In the case of childhood tuberculosis the reason can be the lesser height of the blood column in the chest; but why do we miss this preference also in the primary tuberculous infection in adults?** J. C. J. Burkens, M.D., Meppel, Netherlands.

ANSWER.—Facts have not been established to answer this question. The subject has been one of long and frequent discussion and numerous controversies. Many theories have been advanced, but they are still theories. That standing or sitting positions reduce blood flow in the upper parts of the lungs and so favors growth of tubercle bacilli is opposed by those who maintain that the circulation is better in the apex than in the remainder of the lungs and affords greater opportunity for the establishment of hematogenous infections. It is true that primary lesions may develop anywhere in the lungs of adults just as they do in children. However, although children rarely develop the reinfection chronic type of pulmonary tuberculosis, when it does occur there is a definite preference for the upper parts of the lungs. There is no known physiologic or anatomic difference between the lungs of children and adults that accounts for the localization of secondary lesions in these areas.

It has been strongly argued that the relative immobility of the upper parts of the lungs makes them more susceptible to reinfections with tubercle bacilli, as those which reach these areas remain there. The defensive mechanism has better opportunity to operate where there is little movement, and therefore the disease becomes chronic. In any event, collapse procedures which reduce movement usually inhibit the progress of the disease. On the other hand, there are persons who maintain that the apexes have greater mobility and therefore more bacilli reach them through the air passages. When established, the tubercle bacilli receive more oxygen, so important for their proliferation.

Some workers maintain that tubercle bacilli are brought from the cervical lymph nodes and tonsils to the apex through lymphatics which drain these areas. Once stationed in the apexes they are retained because the lymph flow from these areas is poor.

The belief has been expressed that native or acquired resistance of the individual to tubercle bacilli is important; that is, the more resistance present, the greater the likelihood of localization in the apexes. Unfortunately, this, like all other considerations, is theoretical.

TREATMENT OF HEMOPHILIA

To the Editor:—**Having as a patient a child 3½ years old afflicted with hemophilia, I would appreciate knowing whether an effective treatment or one which even alleviates partially the condition has yet been found. Thanking you for any help you may be able to offer.**

Glen W. Tuttle, M.D., Belgian Congo.

ANSWER.—Antihemophilia fractions have been prepared from human blood plasma, which, when given intravenously in doses of 200 to 400 mg., lower the coagulation time for eight to twelve hours. This gives results similar to the injection of 100 to 150 cc. of fresh citrated human blood intravenously every twelve to twenty-four hours. The coagulation time has been reduced to normal limits by the oral ingestion of 5 cc. of neohemoplastin or similar preparations once or twice daily, or the parenteral route may be used. Some patients respond to sensitization with foreign proteins, with periodic local injections of the sensitizing substance in minute amounts intradermally (Mills, C. A.: *J. Lab. & Clin. Med.* **17**:932 [June] 1932). Ovarian or estrogenic substances, recommended by some, have not given good results in the experience of all investigators. Roentgen ray irradiation of the spleen has been used, but the possibility of deleterious remote results remains to be studied.

HEART BLOCK AND ADAMS-STOKES SYNDROME IN YOUNG WOMAN

To the Editor:—**A white woman aged 19 complains of occasional dizzy spells. She has a history of having complete heart block since birth. Her heart function has always been good. She has lost consciousness on three occasions. Examination revealed a pulse of 36 and a systolic blowing murmur over the pulmonic area about grade 1 or 2. The heart was not enlarged. Blood pressure is 130/60. Laboratory studies show a mild anemia. An electrocardiogram shows complete heart block, with a ventricular rate of 30 and an auricular rate of 50. Please advise as to whether or not complete heart block is a contraindication for pregnancy in a patient like this.** Harry Parks, M.D., Atlanta, Ga.

ANSWER.—Complete heart block under the age of 30 is exceedingly rare. It is to be attributed to one of four conditions: (1) congenital defect of the bundle itself, which is usually associated with a ventricular septal defect, (2) a residual of severe diphtheria even rarer than the congenital type, (2) acute rheumatic involvement and (4) some other infectious process of virus or other nature such as has been reported in mumps.

The presence of the Adams-Stokes attacks makes this case still more unusual. It may be considered almost unique. There does not seem to be any clear proof of an etiologic factor. It sounds as if it could be congenital despite the absence of evidence of ventricular septal defect or of other congenital abnormalities.

Complete heart block, in the absence of symptoms or important complications, is not a contraindication of pregnancy, but the occurrence of what seems like the Adams-Stokes syndrome raises a serious question.

It may be well to try the effect of ephedrine or paredrine or even atropine to see whether there may be a change in the degree of block or in the ventricular rate prior to final decision. In emergency, of course, epinephrine (1:1,000) 0.25 to 1 cc. subcutaneously, repeated as needed, is the therapeutic measure of choice in the presence of recurrent attacks of Adams-Stokes syndrome.

So far as can be determined there is no previous experience with a case just like this.

KNEE-CHEST POSITION—EARLY RISING IN PUERPERIUM —MALPOSITIONS OF UTERUS

To the Editor:—**Please discuss postpartum care with particular reference to the employment of the knee-chest position and the matter of getting patients out of bed and on their feet within twenty-four to seventy hours after delivery. There seems to be much difference of opinion about the importance of this practice in the prevention or production of malpositions of the uterus and other morbid pelvic conditions. Pavey has mentioned a series of patients who were out of bed and on their feet within a matter of hours after delivery, but his practice has included the routine placement of a pessary immediately after the expulsion of the placenta, and the pessary is left in place for six to eight weeks. Others, however, seem enthusiastic about getting their patients on their feet within twelve to seventy-two hours post partum without the supporting pessary. Because early rising of certain postoperative patients has proved helpful and practical, is it fair and safe to assume that the routine may be adopted to postpartum patients?** E. G. Puterbaugh, M.D., Tipp City, Ohio.

ANSWER.—This query discusses separate items that do not have as much relationship as might appear from the wording of the preamble to the question. These are the employment of the knee-chest position (and presumably other bed exercises), early rising of puerperal patients and malpositions of the uterus.

The chief medical reasons for bed exercises are to improve circulation as an aid in avoiding phlebitis and to improve the tone and condition of overstretched abdominal muscles.

Titus (Management of Obstetric Difficulties, ed. 3, St. Louis, C. V. Mosby Company, 1945) says "It has been customary to recommend that the knee-chest exercise as a preventive of uterine misplacement is to be begun on the seventh day, although according to Eichner this is not really effective until during the third and fourth weeks of the puerperium. I agree with his view of this because of the fact that the uterus impinges against the promontory of the sacrum until at least the third week and thus is prevented from assuming a position of retrodisplacement before this time. Moreover, it may have serious consequences, as Redfield and Bodine have reported instances of air embolism following this exercise in the early days of the puerperium."

Early rising from bed, followed soon by discharge from the hospital, was begun as a wartime necessity to effect a more rapid "turnover" in crowded maternity divisions of hospitals. It was justified on the grounds of the reported good results, especially in avoidance of phlebitis, obtained by surgeons with postoperative patients ordered out of bed within twenty-four to forty-eight hours after various major operations. Many hold the opinion that this course for both types of patients is an extreme swing of the pendulum that will presently adjust itself to a more conservative midpoint.

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Early rising of puerperal patients has now acquired some medical virtue, because it does not seem to have had ill effects, pelvic disorders and uterine displacements did not increase noticeably, general muscle tone did seem to be restored more promptly, and perhaps the incidence of phlebitis was diminished; moreover, the obstetric divisions of hospitals are still overcrowded!

The procedure of inserting a pessary immediately after expulsion of the placenta, referred to in the query, does not appear to be good obstetric practice and could reasonably be blamed as a foreign body carrier or excitant of puerperal infection happening in any such patient. This is too much like using a crutch for fear of becoming lame.

In direct reply to the question, it is safe to assume that reasonably early rising from bed after delivery is a proper procedure for the average, normal puerperal patient.

COPPER SULFATE METHOD OF MEASURING HEMOGLOBIN

To the Editor:—**Regarding the copper sulfate specific gravity method of determining the blood hemoglobin: Do any factors other than hemoglobin content influence the results to an appreciable amount? Is there any known correlation between the behavior of the drop and the blood level in grams which would enable one to obtain the equivalent in grams?**

M.D., Ontario.

ANSWER.—The description of the copper sulfate method for measuring specific gravities of whole blood and plasma should be studied carefully (Philips, R. A.; VanSlyke, D. D.; Dole, V. P.; Emerson, Kendall, Jr.; Hamilton, P. P., and Archibald, R. M.: *Bull. U. S. Army Med. Dept.*, December 1943, p. 66. Simmons, J. S., and Gentzkow, C. J.: Laboratory Methods of the United States Army, ed. 5, Philadelphia, Lea & Febiger, 1944). If the solutions of copper sulfate are prepared carefully, factors other than hemoglobin content in a whole drop of blood do not appreciably influence the estimation of the amount of hemoglobin in normal blood by this method. There is a correlation between the specific gravity of the drop and the amount of hemoglobin as expressed in grams per hundred cubic centimeters. For accurate estimations the authors advised the measurement of both whole blood and plasma or serum. However, they also maintained that useful information can be obtained from the specific gravity of the whole blood alone by using the average normal figure of 1.0264 as the value for the specific gravity of the plasma. There will be considerable error at times if this procedure is followed in pathologic conditions. In fact any laboratory equipped to carry out this method probably also will have apparatus for some other accurate method for the determination of values of hemoglobin.

AURICULOVENTRICULAR BLOCK IN MIDDLE AGED WOMAN

To the Editor:—**A woman aged 46 is suffering with a complete heart block. The condition began about eighteen months ago, when her pulse rate was between 50 and 60. She felt fairly well until July 1946, when she suddenly fainted. Examination revealed a pulse rate of about 42. She began suffering with syncopal attacks for a period of about six weeks. The volume of the pulse was not regular. An electrocardiogram showed a heart block. She was given ephedrine and amphetamine preparations without apparent results. Epinephrine solution seemed to improve the syncopal attacks. On one occasion, for three days about six hours a day her pulse rate was 55 at irregular times. Since then she has been up and getting around more but her pulse rate has been gradually getting less. For the past five to six weeks her liver has begun to enlarge (chronic passive congestion). She has been taking digitalis and resting more. There seems to be some slight decrease in the size of the liver, but her pulse rate is now 23 beats per minute. The tendency seems to be downward all the time. Her weight was originally around 200 pounds (91 Kg.). She now weighs 150 pounds (68 Kg.). The etiology is apparently unknown. If there is anything known with reference to a possible improvement in the condition of the heart block, please let me know.**

M.D., New York.

ANSWER.—Auriculoventricular block developing in a middle aged woman is uncommon in contrast to its occurrence in the other sex. However, in either male or female the etiology is probably coronary atherosclerosis. Less likely are such possible causes as syphilis, diphtheria, rheumatic fever or infection of other and more obscure nature. Still rarer, however, are the remote possibilities of intracardiac tumors, primary or secondary, infestations of the heart as in trichiniasis, trauma, and amyloid or other unusual diseases. However, each one of these possible causes must be thought of, and in her case with the loss of weight and vagueness of other causation cancer must be considered.

Treatment of high grade auriculoventricular block with Adams-Stokes attacks is the use of epinephrine hydrochloride 1:1,000 solution 0.25 to 1 cc. subcutaneously as often as needed. Ephedrine, amphetamine, paredrine and atropine are much less likely to be of value.

EVENTRATION OF DIAPHRAGM OR HERNIATION OF STOMACH

To the Editor:—**A man aged 43 weighs 175 pounds (80 Kg.) and is 5 feet 11½ inches (181 cm.) tall; he complained for several months of persistent sticking pains in the precordium. This is not related to exercise, food intake, time of day or posture. The electrocardiogram shows regular rhythm and rate. The PR interval is 0.12. Comment on the electrocardiogram is "no definite diagnostic pattern." The general physical condition is good and there is no dyspnea or edema. Blood presure is 138/80. X-ray eventration with pronounced elevation of the left diaphragmatic dome is fully three intercostal spaces above the average normal; there is moderate gaseous distention of the hollow viscera thereunder. This elevation is also responsible for a rotation and displacement of the heart toward the right, this being responsible for disturbance in relative measurements, the deviation to the right being proportionally greater than that to the left. Otherwise gross abnormality in cardiac contour is not discernible. The conclusion is that there is pronounced eventration of the left diaphragm with the heart rotated and displaced to the right. (The heart contour is apparently normal in consideration of the displacement.) Slight root branch thickening is present; the lung fields otherwise are clear. With repair of the diaphragm, what is the prognosis for relief from cardiac symptoms, and what of mortality in operation?**

M.D., New Jersey.

ANSWER.—Herniation of the stomach, with or without other abdominal organs, through the diaphragm into the chest occurs far more frequently than eventration of the diaphragm. Fluoroscopic and roentgenographic barium studies of the esophagus, stomach and, if necessary, colon should be made in various projections in order to determine whether the elevated "diaphragm" is actually the diaphragm or herniated stomach or bowel. Surgical correction of either a diaphragmatic hernia or an eventration of the diaphragm would almost certainly cause the heart to return to its normal position and should stop the precordial pain. The mortality rate for either operation should not exceed 5 per cent if it is performed expertly by a surgeon thoroughly familiar with intrathoracic surgery. The operation for diaphragmatic hernia is, however, often performed by the abdominal route.

VENTRILOQUISM

To the Editor:—**What is the mechanism of phonation in ventriloquism? Is the theory that the sound is produced using the inspired air stream correct? Some professional ventriloquists feature the ability to continue their "dummy" voice even while smoking a cigaret and, more dramatically, while drinking a glass of water. By what means is this done, particularly that of speech while drinking water?**

M.D., Missouri.

ANSWER.—The art of ventriloquism was known to the ancient Egyptians and Hebrews according to archeology but derives its name from the Latin (venter—the belly; loqui—to speak) on the erroneous supposition that it came from a peculiar use of the stomach during the process of inhalation. In reality, the words are formed in the normal manner but with immobility of the visible muscles concerned with speech. The breath is allowed to escape slowly and the tones are muffled by narrowing the glottis, keeping the mouth closed as much as possible with the tongue retracted, and only its tip in motion. This pressure on the vocal cords diffuses the sound and gives the illusion of distance. The use of gestures and other contrivances to divert the attention of the listener is highly important. The art is in keeping the lower jaw immobile and diverting the attention from the speaker to his dummy and other props.

HYPERVENTILATION IN NEUROCIRCULATORY ASTHENIA

To the Editor:—**I have a cardiac patient whose symptoms are caused mainly by hyperventilation. Please discuss treatment. I cannot find any adequate discussion in the literature.**

M.D., California.

ANSWER.—Hyperventilation is a frequent symptom of neurocirculatory asthenia, which in turn is a symptom complex sometimes called effort syndrome, the soldier's heart and anxiety neurosis. At one time it was thought that hyperventilation alone was the cause of neurocirculatory asthenia. It is certainly an aggravating factor and produces new symptoms itself, of which the chief one is faintness.

For many years it has been known that sighing respiration has been a common manifestation of neurocirculatory asthenia. Another manifestation of respiratory abnormality is hyperventilation. Hyperventilation, of course, acts primarily through the production of respiratory alkalosis with high p_H and low pCO_2. Although it may occur in other conditions, its most common spontaneous occurrence clinically is that with neurocirculatory asthenia. Prolonged periods of hyperventilation also appear frequently in women with hysteria and in patients with severe encephalitis.

Treatment of this common type of hyperventilation is largely a matter of instruction and training to avoid the procedure itself,

It is often possible to do this by adequate coaching and by pointing out to patients that some of the symptoms are merely results of breathing too fast. Simple awareness of this fact seems to cause the symptoms to lose their frightening quality. There should be treatment also of the neurocirculatory asthenia itself.

OBESITY

To the Editor:—A woman aged 30, married and with 2 children, was very thin as a child but after puberty suddenly began to gain weight rapidly, reaching a weight of 290 pounds (132 Kg.) at the age of 20 years. She has been on a diet and has taken thyroid up to 2 grains (0.12 Gm.) three times a day and amphetamine 5 mg. three times a day for some time but has not been able to lose weight. The basal metabolic rate is — 8. At a previous hospitalization she was told by an endocrinologist that she had a pituitary type of obesity. I would greatly appreciate any information you could give me concerning the treatment of this type of obesity.

Abraham B. Sand, M.D., Burlington, N. J.

ANSWER.—There is little, if any, basis for the diagnosis of "pituitary obesity" in modern endocrinology. Such changes in weight as accompany proved lesions of the hypophysis are always in the direction of loss of weight. It is known, however, that diseases of and physical or psychic trauma to the hypothalamus may result in obesity. When it does, it follows increased appetite. Hence the treatment of this type of obesity is similar to that of any other type of obesity in which no specific glandular deficiency can be remedied by specific endocrine therapy. That is, the intake of calories in the form of food must be reduced below the calories expended as energy. Considering the thyroid medication the patient is getting and the basal metabolic rate, one may be certain that she is not adhering to whatever reduction diet she is supposed to follow.

TETANY OF THE NEWBORN

To the Editor:—Are there contraindications to the use of intravenous calcium in tetany of the newborn? If so, what are they and what is the explanation for fatalities that have been reported?

Harry W. Orris, M.D., New York.

ANSWER.—According to pediatric textbooks there are no contraindications to the use of intravenous calcium in tetany of the newborn. It should, however, be given only as calcium gluconate in amounts of 5 to 10 cc. and in a 10 per cent solution. But it is doubtful whether tetany of the newborn, so called, is really a disease. It is rather a symptom complex, as cures have also been reported with dihydrotachysterol. It must always be remembered that in the frog's heart calcium ions when present in quantities above normal or when in a proportional excess over sodium and potassium ions will cause a condition of tonic contraction that has been designated as calcium rigor.

REJOINING VAS DEFERENS AFTER SEVERANCE

To the Editor:—With what degree of success can the vas deferens be rejoined after operation for sterilization? Would vitallium in the form of tube or foil, with or without thromboplastin (Parke, Davis & Co.) be of aid in the technic?

M.D., Iowa.

ANSWER.—Before an anastomosis is attempted, an ejaculated specimen should be examined for spermatozoa because spontaneous recanalization is a possibility. Success in repairing a vas deferens cannot be obtained after a properly performed operation for sterility in which a liberal section of vas is excised. An epididymovasostomy would be the operation of choice. At best, this procedure is successful in not more than 5 per cent of cases. Since the lumen of the vas measures only 0.5 mm., it does not seem possible that anything other than a fine wire could be employed in reconstructive surgery.

LONG CONTINUED ADMINISTRATION OF TESTOSTERONE PROPIONATE

To the Editor:—A man aged 53 has been receiving testosterone propionate 10 mg. twice weekly for the past six months, claiming a sense of well being. He requests continuation of this therapy. Is there any danger in the continued administration of this hormone?

M.D., New York.

ANSWER.—There is little danger attending the continued administration of 10 mg. of testosterone propionate twice weekly. The use of larger doses according to Grollman (Essentials of Endocrinology, ed. 2, Philadelphia, J. B. Lippincott Company, 1947, p. 491) may be accompanied occasionally with distressing symptoms—dyspnea, chest pain, palpitation and edema of the lower extremities—which require the cessation of therapy.

INSOMNIA

To the Editor:—A woman aged 49 has completed her menopause and is symptom free. Since 1930, when she had a spinal fusion done, she has suffered from insomnia. Almost continuously she has taken barbiturates and for the past five years has used 3 to 4½ grains (0.2 to 0.28 Gm.) of seconal nightly. A real addiction is now present. Her home life is happy and she has no worries of any kind, except the worry of sleepless nights. She has consulted numerous medical men, and the net result in each case was more barbiturates. Physical examination is completely negative. Can you suggest a new method of approach to this problem?

Daniel B. Lynch, M.D., Albany, N. Y.

ANSWER.—The first thing to make clear to both the doctor and his patient is that a medicinal dose of the barbiturates taken at night to induce sleep, even to the degree of 3 or 4½ grains of seconal, will not prove harmful to her general health. It would be much better for the patient to take this medicine regularly than for her to worry each night at bedtime. Without knowing the patient, it is less easy to suggest a future line of treatment. Possibly the services of a man experienced in the technic of hypnosis would help this patient.

ENURESIS IN YOUNG WOMAN

To the Editor:—Would you please discuss the diagnosis and treatment of enuresis in a woman aged 17 years who is otherwise perfectly normal, as far as I can determine. I have heard that there is some new drug therapy for this condition but I have not been able to find it.

Clement H. Arnold, M.D., Palo Alto, Calif.

ANSWER.—Included in the study of enuresis there must be thorough investigation of the urinary tract, genital tract, vertebral column, neurologic system and metabolism, and possibly psychologic study. Assuming that all these examinations are normal, there are a few drugs that may be used. Some rather empirical treatments can be given in addition to the drugs. The most commonly used drug is ephedrine, which, being a sympatheticotonic drug, tends to reinforce the internal sphincter. Paradoxically, atropine-like drugs are often prescribed to reduce the sensitivity of the internal sphincter. Urethral dilations and the instillation of silver nitrate solutions are adjuncts to the drug therapy.

BACILLURIA WITHOUT PYURIA

To the Editor:—I have had several cases of Escherichia coli bacilluria without pyuria. What explanation can be offered for this, assuming that the bacilluria is not a contaminant? Also what is the probable source of the infection—hematogenous or ascending?

Harry W. Orris, M.D., Bronx, N. Y.

ANSWER.—Escherichia coli is found not infrequently in the catheterized urine without pyuria in chronic urinary infection. In such cases the infection usually is in a dormant stage, and a state of comparative immunity may have been established. Cases of bacilluria without pyuria may be divided into three groups: those in which bacilluria is found (1) in the bladder urine only and not in the renal specimens obtained by means of ureteral catheters, (2) in one or both catheterized renal specimens only, and (3) in both the bladder and renal specimens. In the latter group the absence of pyuria would be quite rare in repeated examinations. Bacillary infection in the urine usually is of the ascending type, although in some cases it may be hematogenous.

REATTACHMENT IN IRIDODIALYSIS

To the Editor:—A soldier aged 22 sustained a shrapnel injury in 1944. He received a traumatic iridotomy or iridodialysis over a distance of about 6 mm. in the left eye. While I have never seen a reattachment of the iris base over so extensive an area, I have succeeded in reattaching it, so that the eye is now perfectly normal. Are there any cases of such reattachments on record?

I. J. Cooper, M.D., New Brunswick, N. J.

ANSWER.—Four cases of reattachment in iridodialysis were reported by Jameson. The area of separation was 8 mm. in the first case. No mention of the extent of the lesions in cases 3 and 4 was made. Key reported 2 cases which were surgically repaired. Each involved approximately one fourth of the basal attachment of the iris. Repair of the defect by incarceration of a tiny shred of iris within a small keratome incision, without use of sutures, was advocated by Wheeler. Spaeth discusses repair employing sutures.

References:

Jameson, P. Chalmers: *Arch. Ophth.* **38**: 17, 1909.
Key, Ben Witt: Extensive Iridodialysis, *Arch. Ophth.* **7**: 748 (May) 1932.
Wheeler, J. M.: *Am. J. Ophth.* **17**: 683 (Aug.) 1934.
Spaeth, E. B.: The Principles and Practice of Ophthalmic Surgery, ed. 3, Philadelphia, Lea & Febiger, 1944.

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